Telecom Regulatory Authority of India

Recommendations

on

Enabling Unbundling of Different Layers Through Differential Licensing

New Delhi, India

19th August 2021

Mahanagar Doorsanchar Bhawan

Jawahar Lal Nehru Marg,

New Delhi – 110002

CONTENTS

Annexures

CHAPTER 1
INTRODUCTION

A. DoT Reference

1.1 The Department of Telecommunications (DoT) through its letter No. 20-281/2010-AS-I Vol.XII (pt) dated 8th May 2019 (**Annexure-I**), inter alia, informed that the National Digital Communications Policy (NDCP) 2018, under its 'Propel India' mission, envisages one of the strategies as 'Reforming the licensing and regulatory regime to catalyse Investments and Innovation and promote Ease of Doing Business'. Enabling unbundling of different layers (e.g., infrastructure, network, services, and application layer) through differential licensing is one of the action plans for fulfilling the afore-mentioned strategy. Through the said letter dated 8th May 2019, DoT, inter alia, requested TRAI (also referred as the Authority) to furnish recommendations on enabling unbundling of different layers through differential licensing, under the terms of the clause (a) of sub-section (1) of Section 11 of the Telecom Regulatory Authority of India Act, 1997, as amended by TRAI Amendment Act, 2000.

B. Telecom Licensing Framework in India

1.2 The grant of telecom licenses in India is primarily governed by the Indian Telegraph Act, 1885, and the Indian Wireless Telegraph Act, 1933. The Indian Telegraph Act, 1885, provides an exclusive privilege to the Central Government for establishing, maintaining, and working telegraphs, and power to grant licenses for such activities.

1.3 The Indian Telegraph Act, 1885, defines 'Telegraph" as under:

> *"Telegraph" means any appliance, instrument, material, or apparatus used or capable of use for transmission or reception of signs, signals, writing, images and sounds or intelligence of any*

nature by wire, visual or other electro-magnetic emissions, Radio waves or Hertzian waves, galvanic, electric, or magnetic means.

1.4 Licensing framework has been an integral part of India's telecommunication law. Under the Indian Telegraph Act, 1885, Section 4 gives the Central Government the power to grant licence on such conditions and in consideration of such payments as it thinks fit, to any person to establish, maintain or work a telegraph within any part of India. Considering the market and technological developments, the licensing regime has evolved with the passage of time.

1.5 The existing licensing regime i.e., the Unified Licence regime came into effect in 2013. Unified License offers service-wise authorizations for establishing service-specific network and to provide the authorized service(s). The allocation of spectrum is delinked from the licence and it has to be obtained separately as per the prescribed procedure, for different services. Only one Unified License is required for all telecom services in the entire country. The service provider may choose the services to be offered, which are called Service Authorizations. Authorization for various services, as contained in UL, are mentioned below:

a) Unified Licence (All Services)
b) Access Service (Service Area-wise)
c) Internet Service (Category – A with All India jurisdiction)
d) Internet Service (Category – B with jurisdiction in a Service Area)
e) Internet Service (Category – C with jurisdiction in a Secondary Switching Area)
f) National Long Distance (NLD) Service
g) International Long Distance (ILD) Service
h) Global Mobile Personal Communication by Satellite (GMPCS) Service
i) Public Mobile Radio Trunking Service (PMRTS)

j) Very Small Aperture Terminal (VSAT) Closed User Group (CUG) Service

k) INSAT Mobile Satellite System-Reporting (MSS-R) Service

l) Resale of International private Leased Circuit (IPLC) Service

Authorization for Unified License (All Services) covers all services listed at para (b) in all the service areas, (c) and (f) to (l) above.

1.6 Service only layer was introduced in India by permitting Virtual Network Operators (VNOs) in 2016. VNOs, who do not own the underlying core network(s), are Service Delivery Operators (SDOs) and treated as an extension of network service operators (NSOs). VNOs are not allowed to install equipment interconnecting with the network of other NSOs. No spectrum is assigned to VNOs. Parenting with only one NSO is permitted for access services. Unified License (VNO) is a regime parallel to UL for delivery of service. It offers all authorisations as available in the UL. In addition, it offers an authorisation for the 'Access Services Category B' wherein the service area is a District of a State/Union Territory. Under each authorization of UL (VNO), a licensee is permitted to provide such telecom services, which the UL licensee under the similar authorization is permitted to provide.

1.7 Infrastructure Provider Category-I (IP-I) are entities registered with DoT, which are permitted to establish telecommunication infrastructure. IP-Is can provide assets such as Dark fibers, Right of Way, Duct space, and Towers on lease/rent out/sale basis to the licensees of telecom services on mutually agreed terms and conditions. Currently, IP-Is are not permitted to own and share active infrastructure. To enhance the scope of the infrastructure provider, TRAI has issued its recommendations on 'Review of Scope of Infrastructure Providers Category-I (IP-I) Registration' on 13th March 2020 recommending enhancement of scope of IP-I providers to include active infrastructure also. The Authority recommended that *"the expanded scope of the IP-I registration should include to own, establish, maintain, and work all such infrastructure items, equipment, and systems which are required for*

establishing Wireline Access Network, Radio Access Network (RAN), and Transmission Links. However, it shall not include core network elements such as Switch, MSC, HLR, IN, etc. The scope of the IP-I Registration should include, but not limited to, Right of Way, Duct Space, Optical Fiber, Tower, Feeder cable, Antenna, Base Station, In-Building Solution (IBS), Distributed Antenna System (DAS), etc., within any part of India".

1.8 The application layer consists of those providers who are providing various application services to different verticals using telecom resources. With technologies such as Machine-to-Machine (M2M) communications, IoT, Cloud services, data centres, e-commerce, etc., different application providers are in the field, and they are using telecom resources for the provision of their services. TRAI has already given its recommendations on M2M, Cloud services, Other Service Providers (OSPs), etc., with very light-touch regulation for such entities.

C. Consultation process

1.9 Prior to issuing the comprehensive Consultation Paper, TRAI sought inputs from stakeholders on the broad framework for unbundling of license through a Pre-Consultation Paper dated 9th December 2019. Written comments were invited from the stakeholders by 6th January 2020. However, considering the request from the Industry Association, last date for submission of the written comments was extended to 27th January 2020. Comments were received from 18 stakeholders. The comments are available on TRAI's website (www.trai.gov.in).

1.10 Based on the inputs received from the stakeholders, international practices and internal analysis, Consultation Paper on 'Enabling Unbundling of Different Layers Through Differential Licensing' was released on 20th August 2020 seeking inputs of the stakeholders on the specific issues raised in the consultation paper. The last date for comments and counter-comments were 17th September 2020 and 1st October 2020, respectively. However, considering the requests from the

stakeholders, the last date for comments and counter-comments were extended to 30th October 2020 and 13th November 2020, respectively. Comments were received from 25 stakeholders and counter-comments from 4 stakeholders were received, which are available on TRAI's website (www.trai.gov.in). An Open House Discussion (OHD) was conducted on 3rd February 2021 through virtual conference mode, which was attended by various stakeholders from Industry Associations/Forums, TSPs, M2M providers, Infrastructure providers, Network companies, consultancy groups, application providers, etc.

D. Structure of Recommendations

1.11 The current chapter provides a brief background to the subject. In the next chapter, issues raised are analysed and issue-wise recommendations are presented. The third chapter provides summary of the Recommendations.

CHAPTER 2
EXAMINATION OF ISSUES

A. Background

2.1 The NDCP-2018 under the mission 'Propel India', inter alia, mentions that 'the recent past has witnessed an unprecedented transformation in the Digital Communications Infrastructure and Services sector with the emergence of new technologies, services, business models, and players. There is, hence, an imperative need to review the existing licensing, regulatory, and resource allocation frameworks to incentivize investments and innovation to optimize new technology deployments and harness their benefits.' It envisages 'Enabling unbundling of different layers (e.g., infrastructure, network, services, and applications layer) through differential licensing' as one of the strategies for catalyzing investments for Digital Communications sector.

2.2 Under Unified License, infrastructure, network, and service layers are not segregated and are part of the Unified License. However, the Infrastructure layer is unbundled in the form of Infrastructure Provider Category-I (IP-I), though with a limited scope. TRAI, through its recommendations dated 13th March 2020 on 'Enhancement of Scope of Infrastructure Providers Category-I (IP-I)", has already recommended to enhance the scope of IP-I to include active infrastructure elements also. If the scope of IP-I provider is enhanced and it includes active infrastructure elements also, it will rightly serve the purpose of an independent infrastructure layer. UL (VNO) has been created to develop and promote the Service Layer. UL (VNO) licensees provide the services to the end users by obtaining the resources from Unified Licensee. For service layer, the current regime of UL (VNO) may aptly fit into the unbundling plan. Application layer players are already under light-touch regime.

2.3 As already discussed, Unified License offers service-wise authorizations, for establishing service-specific network and to provide the authorized service(s). For instance, in the case of Access Service authorization, both creation of network and delivery of service are embedded in the license. Along with the network operations, such UL licensees are also providing the services to the customers under the same authorization. There is no separation of network layer from the service layer. The licensees of UL establish the network, maintain it, provide the service to the subscribers, manage the tariff, billing, QoS, customer care, etc.

2.4 At present, the UL (VNO) license for service delivery is quite successful in delivering some of the telecom services, such as the Internet and Long-Distance Services. However, for mobile services, the VNOs are not picking up as the existing network operators, that is, Unified Licensees themselves are providing the services directly to the subscribers on retail basis. It is, however, noted that one of the PSU Service Provider has offered the mobile services to a few VNOs.

2.5 From the above, it is observed that the current regime supports all the layers i.e., Infrastructure, Network, Service and Application. However, under UL, there is no separation of network layer from the service layer. The UL licensee establishes the network and also provides the services to the subscribers.

2.6 In their comments to the Pre-consultation Paper, many stakeholders submitted that the existing licensing regime supports layered approach. Any further unbundling will make licensing regime more complex and will impact the ease of doing business. Further, it will be commercially unviable for existing unified licensees to split their functions into different layers. One stakeholder also mentioned that most of the TSPs have now hived off their tower and fiber infrastructure to separately established IP-I company to promote sharing; further, the sector has also witnessed sharing of spectrum and active infrastructure amongst

licensed TSPs; therefore, there is no need for introduction of a new licensing framework. On the other hand, some stakeholders favoured unbundling of different layers (e.g., infrastructure, network, services, and application layer) through differential licensing. The different models suggested by them prescribed different layers such as network infrastructure layer, network service layer, service delivery layer and digital service layer. As regards application layer, some stakeholders submitted that undue conditions of licensing on application services which are unregulated till now will decimate the innovation and growth of such application services. Though in the present licensing framework, infrastructure layer is being serviced by IP-Is, network (including infrastructure and service) layer is being served by UL holders, service delivery layer is being serviced by VNOs, but there is lack of proliferation of SDOs/VNOs in the mobile segment.

2.7 All the layers, except service delivery layer (VNO), that too in mobile services, seem to be working effectively. It may be worth mentioning that VNOs have been raising their concern that they have been facing difficulty in getting access facilities from the Access service providers. VNOs have been demanding to make it mandatory for the access service providers to provide access to them. While VNO regime is successful in other licenses/authorizations, only one access service provider (PSU) has entered into an agreement with a few VNOs.

2.8 The study of international practices (Annexure-II) shows that most of the countries have separate categories of licenses for Network Service Provider and Service Delivery Operators. The Service Delivery Operators are very lightly regulated. These countries have a framework or guideline describing how the resources will be provided by the NSO to the SDO. Few countries have put in place a framework such that the NSO part with their resources with SDO in a transparent and non-discriminatory manner. Countries, viz., Singapore, Malaysia, and Uganda, have put in place certain obligations or have come out with a framework for wholesale mobile access services. In many other

countries, Regulators have not prescribed any obligation on network operators, however, the wholesale resources of Network Service Providers are easily available to the Service Delivery Operators in a transparent and non-discriminatory manner. In most of the countries, SDOs/VNOs are prevalent, and they do not experience any issues in having arrangements with the Network Operators, which could be attributed to the timing of introduction of VNOs. In India, VNO regime was introduced when the telecom service providers had already provisioned for offering services (i.e., investments were made) and market had already reached near saturation (i.e., overall teledensity was about 90% in December 2016).

2.9 To attract investment and strengthen the service delivery segment, one view could be that if the network service layer and service delivery layer are separated by introducing a specific license for network layer alone, the network layer operator would willingly share its network with service delivery operators, thereby resulting in reduction of cost and increased utilization of resources, including spectrum. Study of international practices shows that the network operators are also allowed to provide services to the end customers either under the same license or by taking a separate license for service delivery. The issue that arises is whether the network operator may be allowed to offer services directly to the end customers. It may be worth noting that the network operator will have to buy spectrum at a market determined price for provision of mobile services and will also have to fulfil the minimum roll-out obligations. In case it is not allowed to offer services to end customers directly, monetization of network and spectrum resources may not be in its control. This may also lead to inefficient utilization of spectrum. In absence of SDOs/VNOs across the network, the investment may be underutilized, and Return on Investment (RoI) can become a challenge. In case network operator is allowed to provide services itself, mere unbundling of license may not yield the desired results as a company owning network and providing service also, may

not tie up with other service delivery operators or may discourage VNOs by offering discriminatory unviable commercials and other terms and conditions. Therefore, in order to make the unbundling effective, there may be a need of a framework to be imposed on network operators for provision of wholesale services to service delivery operators.

2.10 While suggesting different layers and their scope, stakeholders suggested that a multi-layered ecosystem should be light-touch regulated. In case it is decided to unbundle the network service layer and service delivery layer, there would be many issues relating to scope of service, responsibilities, obligations, regulations, which needs to be deliberated upon.

2.11 In addition, some stakeholders suggested that in order to facilitate the active infrastructure sharing, payment made by one TSP to another TSP for active infrastructure sharing be allowed as pass-through for calculation of AGR. It was noted that sharing of infrastructure and resources leads to increased utilization and reduction of cost for the TSPs. A TSP is required to put in place all the infrastructure required, it can either be through deploying its own infrastructure or by way of sharing the infrastructure already deployed by another TSP. In any case, it is a cost to the TSP. Therefore, no merit was found in the demand for allowing the payment made to another TSP for sharing of active infrastructure as pass through charges for computation of AGR.

2.12 Some stakeholders requested that UL VNO (AS) licensee be allowed to be parented with two or more NSOs (Access Providers). Multi-parenting relies on multiple host MNOs in parallel. MVNO basically works on a roaming agreement with an MNO for the radio network, if multi-parenting is allowed, the SIM could switch between the parented mobile networks based on the signal strength. Presently in India, MVNOs are not allowed to parent with more than one NSO i.e., an MVNO can tie up with only one MNO in an area for their services. In U.S., MVNOs supporting multiple host networks use only one of them for each device,

depending on the specific phone model and/or SIM card used (except for Google Fi, which switches automatically between the different listed host networks based on factors such as relative signal strength).

2.13 In view of the foregoing discussion, comments were sought from the stakeholders on the specific issues. The next section provides issue-wise summary of comments received from the stakeholders and analysis thereof. Since the questions raised in the consultation paper were closely related, the relevant questions have been grouped together.

B. Issue-wise summary of comments from the stakeholders and analysis

Issue 1: Do you agree that in order to attract investment and strengthen the service delivery segment, Network services layer and Service delivery layer needs to be separated by introducing specific license for Network Layer alone? In case network layer and service delivery layer are separated by creating separate category of licenses,

a) What should be the scope for Network layer license and Service Category licenses?

b) Out of various responsibilities and obligations enumerated in Unified License, what should be the respective responsibilities and obligations of Network layer licensees and Service delivery category licensees?

c) Whether the existing Unified Licensees should be mandated to migrate to the unbundled licensing regime, or the new regime should be introduced, while keeping the existing regime continued for existing licensees till the validity of their license, with an option of migration?

d) Whether existing VNO licensees be mandated to migrate to service delivery category licenses as per unbundled licensing regime?

Comments received from the stakeholders

Separation of Network services layer and Service delivery layer by introducing specific license for Network Layer alone:

2.14 Some stakeholders supported unbundling of different layers. The advantages citied by them were:

i. It will offer opportunities for sharing telecom resources (including networks) and its optimum utilization and promote competition, which will contribute to achieving the objectives of NDCP along with additional revenue streams for the service providers.

ii. Unbundling will attract Investment and Innovation, widespread availability of services, quality services at affordable prices, and sustainable competition and efficient utilization of the network infrastructure. Unbundling Service and Network Layers will help unlock potential of the transformative power of Digital Communications.

iii. Separate layers will allow smaller services and use cases to get the attention of more nimble footed service providers. Unbundling, therefore, becomes important from the point of view of all stakeholders viz. IP-Is, OTTs, and service providers for next-generation services.

iv. It will allow to have targeted regulations where necessary, deregulation elsewhere.

2.15 One of the stakeholders in favour of unbundling of different layers submitted that Network layer utilizing licensed Spectrum be subject to licensing, and the balance of the service delivery eco-system be mandated to get themselves registered for provisioning their services.

2.16 Two stakeholders submitted that Network Layer, comprising of core equipment, radio access network, backhaul, etc., is the most critical for investment and innovation. It is very capital intensive and requires

huge investment. To attract investment and competition, an additional authorization for Network Service in the existing Unified License regime only, may be created. It will provide options to Access Service Provider to use the network of Network Service providers.

2.17 Some stakeholders submitted that no additional benefit will be served by further unbundling, rather the proposed separation of network and service layer will be detrimental to the sector. Some of them also suggested that the policy should focus on simplifying the licensing conditions and equal policies for the competing technologies. Reasons cited by them in support of their opinion were:

i. The current licensing regime supports the layered approach w.r.t Infrastructure, Service, and Applications.
ii. Unbundling of licenses will amount to moving away from the principles of unified licensing.
iii. It is commercially unviable for the existing UL holders to split their functions into network operator and service delivery operator separately.
iv. New level of licensing will bring in unnecessary inflexibility, regulatory burden for issues relating to scope of service, responsibilities, obligations, and regulations applicable to network and service layer separately.
v. Unbundling of license will make licensing regime more complex and will be an impediment in promoting “ease of doing business” in the telecom sector.
vi. Telecom requires long-term investment commitments, and any alterations in the Regulatory regime by introducing proposed unbundling of licenses will adversely impact the curve of deployment of technology. Any structural change in the licensing regime will lead to Regulatory Uncertainty and will deter investors from investing in the future.
vii. Much of the investment in the sector is concentrated in network layer and spectrum, and such investment is done

considering overall licensing framework and possible products/services that can be offered. A converged license allows the operator to make investment in network and spectrum as per its long-term strategy. Any mandatory separate licensing for the network layer will introduce uncertainty for monetization of the investment done and will deter them from making investment towards future technologies.

2.18 Few stakeholders submitted that the scope of IP-I should be enhanced under the existing registration framework only to include all common sharable network infrastructure, provided that they are prohibited from delivery of service to the end customer and allocation of any licensed spectrum.

2.19 One of the stakeholders suggested that existing Unified License regime should be continued, and no reforms are required to be introduced. However, in view of the overall liberal thrust in NDCP, 'light-touch' approach be adopted in all concerned sections of the digital economy viz., infrastructure, networks, digital content, and applications.

Scope, Responsibilities and Obligations of Network Service Layer:

2.20 The stakeholders were of the view that the scope of the Network Provider be building, operating, managing, and maintaining the network; the Network Providers would possess core network, and access to unique rights viz., right to spectrum, right to numbering scheme, and right to interconnection.

2.21 One stakeholder suggested that it would comprise of the physical infrastructure, active and passive elements, and cloud-based instances of the network elements which are required to deploy a telecom network, including all other network elements which are not part of the scope of the existing VNO License.

2.22 Some stakeholders submitted that the Network Provider would be responsible for compliance with Network related Regulations (QoS, Interconnection); Network and Security related compliances (such as Lawful Interception).

2.23 Some of the stakeholders suggested that Network provider should comply with commercial, technical, and operating conditions, Network Coverage and other network related obligations.

2.24 Some stakeholders suggested that network provider should be responsible for various responsibilities and obligations enumerated in Unified License and additional responsibilities to provide unhindered, non-discriminated access to all the VNOs at par with its own Service Delivery.

2.25 One of the stakeholders submitted that the network layer operator should establish suitable billing mechanism both for billing consumers and SDOs. Another stakeholder suggested that there be clear structural separation of network layer and service layer and clear accounting separation.

2.26 One of the stakeholders suggested that the Network Layer License should be at an All-India Level and the Network Provider be allowed to own, install, and operate all Network equipment whether Voice or Data on both access and long-distance routes.

Scope, Responsibilities and Obligations of Service Delivery Layer:

2.27 Some stakeholders submitted that there is no requirement for creation of another license for Service Delivery Layer. One stakeholder suggested that primarily it would cover the current VNO regime.

2.28 Some stakeholders suggested that Service Delivery Operator's scope would include acquisition of customers, all customer-related processes (KYC), Customer Complaint management, tariff, and billing; Compliance with service-related Regulations.

2.29 One stakeholder submitted that the SDO would build a service provisioning infrastructure; enter into agreements with Network Providers for provision of services to customers; Establishment of suitable billing mechanism to bill customers; Providing the QoS as per the QoS guidelines and as per the SLAs with customers; establishment of a grievance redressal mechanism for customer grievances.

2.30 One stakeholder submitted that the scope of SDO should be retailing and bulk of basic network services (Voice, Messaging, and Data connectivity).

2.31 Many stakeholders recommended Light-touch regulation should be adopted for the service delivery layer. One of these stakeholders submitted that the current VNO License regime has not worked especially for Mobile sector; therefore, the current financial terms prescribed for UL-VNO license guidelines should be modified. One of the stakeholders suggested that a radically liberalized approach in the form of a simple online registration for service delivery operators and Integrated service providers (Network and Service) through associated rights viz., Spectrum, RoW, Numbering resources, right to interconnection, etc., be subjected to operate under a framework licensing.

2.32 One of the stakeholders submitted that AGR/Financial Bank Guarantees and SUC applicable to a VNO be replaced by the applicable GST on the sales of the services. Another stakeholder submitted that the expenses such as the LF, Financial BGs, SUC, AGR should not be charged twice from different layers so that the new layer operators have an incentive to offload or separate the Service Delivery from Network service for new providers and foreign investors. It was also suggested that the Regulatory framework and compliances for specified layered services should be made with a light-touch approach and must ensure that competition and innovation is protected.

2.33 One of the stakeholders submitted that principles of level-playing field should be adopted. Another stakeholder suggested that the licensing regime should be uniform with the same services being subject to the same rules.

2.34 One of the stakeholders submitted that service area for service delivery operator should be All India, Specific Telecom Circle or Secondary Switching Area (SSA). There shall be two types of service Category Licenses viz., Mobility and Non-Mobility. Licensed Spectrum shall continue to be separate from License. Only Mobility Service Layer Licensee shall be allowed to bid for spectrum. For Mobility Licensee, responsibilities to include commercial, financial, technical, operating, security, spectrum and operating conditions, roll-out obligations. For Non-mobility Licensee, responsibilities to include commercial, financial, technical, operating, security, and operating conditions, roll-out obligations.

Migration of existing UL Licensees to unbundled licensing regime

2.35 Most of the stakeholders were of the view that the existing Unified Licensees should not be mandated to migrate to the unbundled licensing regime. However, a few stakeholders supported mandatory migration to proposed unbundled licensing regime.

2.36 Some of the stakeholders submitted that the existing licensees must have the option to continue under the existing licensing regime or migrate to a new license.

2.37 One of the stakeholders submitted that if Network Provider is allowed to provide service directly to the end customer after obtaining Service Delivery Operator License, then the present licensing framework needs minimal changes, and it should be mandatory.

2.38 One of the stakeholders submitted that in case any significant changes are proposed to be made in the existing license policy, then a clear

compensation methodology should also be enumerated, especially for investments made in the last 10 years. Another stakeholder submitted that the existing Unified Licensees should be mandated to migrate with a simplified application and adjusted entry fee for un-utilized validity period of their respective licenses.

2.39 Many stakeholders submitted that there should not be any mandatory migration until the validity of the existing licenses; however, the existing Unified Licensees may be given option to migrate to the new regime.

2.40 One of the stakeholders submitted that (i) No worse-off Principle must be adopted for the current licensees while deciding on the policy of migration, (ii) Scope of the existing licensees should not be reduced.

Analysis

2.41 From the comments received from the stakeholders it is observed that one group of stakeholders are in favour of unbundling of Network and service delivery layer while the other group of stakeholders are against such unbundling.

2.42 In unbundling of the network layer and service layer, there is a concept of independent network service provider/operator, who will establish the network and sell the services on a wholesale basis to the service delivery operator for retailing purpose. The Authority agrees with the views expressed by some of the stakeholders that as the current licensees of the UL regime, have established their own networks and are also providing the services to the consumers, it may be difficult for them to split their functions into two layers, and act as the network provider and service delivery operator separately. Further, Telecom is a capital-intensive sector, and the telecom service providers plan their investments and roll-out based on the existing licensing and regulatory regime, apart from the market related factors. Frequent changes in the licensing framework may give a signal of uncertainty to the investors. Thus, any change in the existing Unified License regime (introduced in

the year 2013) to unbundle the network and Services could be detrimental and hamper investments. However, if a separate authorization under Unified License is created for Access Network Provider (network layer) to provide network services on wholesale basis, such a licensee would willingly share its network with service delivery operators, thereby resulting in reduction of cost and increased utilization of resources, including spectrum. Under this authorization for Network layer only, the Access Network Provider should not be permitted to directly provide services to the end customers under the same authorization.

2.43 If a separate category of License for Access Network Provider is created the Access Network Provider could build Core network, Radio Access Network (RAN) and team up with VNOs for provision of services. Since the VNOs are also permitted to set up their own network equipment viz., BTS, BSC, MSC, RSU, DSLAMs, LAN switches, if required, where there is no requirement of interconnection with other Network Service Operator(s), it could create a win-win environment where it is possible for the VNO licensee to support the regime by investing in Radio Access Network. In such a situation, since both the operators have invested for provision of service, the network provider will not perceive the service delivery operator (VNO) as a competitor but as a service delivery partner. Thus, introduction of separate license for Access Network provider could also attract investment and strengthen the service delivery segment.

2.44 With the deployment of 5G technology at the cusp, there will be different kind of use cases covering almost all the economic verticals. The requirements of a particular type of use case will be totally different from other kind of use cases. This may necessitate specialized service delivery operators in various specific niche area of use cases such as Industry 4.0, Smart mining, Precision Agriculture, Smart ports, Windmills, etc. It is quite possible for an entity to be interested only in establishing 5G core network on cloud (known as Cloud Native 5G Core)

and provide the desired slices to the specialized service deliver operators for specific use cases. Such Cloud Native 5G Access Network providers may establish desired Radio Access Network in specific geography or alternatively may get it established by Service Delivery Operators. One of the primary requirements, for deployment of different 5G use cases, is availability of sufficient spectrum in globally harmonized bands. For success of 5G, it is important that infrastructure sharing including spectrum sharing is enabled to a great extent. As regards spectrum sharing, intra-band spectrum sharing between the Access service providers was permitted in India in 2015. However, with the passage of time, other spectrum sharing techniques such as inter-band spectrum sharing, Licensed Shared Access (LSA), Licensed Assisted Access (LAA), Leasing of spectrum etc. have been implemented in other geographies. TRAI is contemplating to issue a separate consultation paper in this regard.

2.45 It may be worth mentioning here that TRAI in its recommendations on "Auction of Spectrum in 700 MHz, 800 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2300 MHz, 2500 MHz, 3300-3400 MHz and 3400-3600 MHz bands" dated 1st August 2018, has recommended that no roll-out obligations should be mandated for spectrum in 3300-3600 MHz band, the prime band for 5G. One of the reasons for recommending no roll-out obligations in this band was the likely usage of this band for 5G and the TSPs will decide 5G rollout based on demand and affordability levels. Such a proposition could be used by an entity interested in offering only 5G based use cases in a localized manner, i.e., the Access Network provider could build core network, buy spectrum in 3.5 GHz band and tie up with the VNO(s) for deployment of localized RAN and provision of industry specific use cases. This could work as a catalyst in deployment of 5G based use cases for different industry verticals in localized manner.

2.46 From the above, it can be derived that creation of separate Network only layer could result in increased sharing of network resources, reduction

of cost, enhance investment in the sector and could also prove to be catalyst in proliferation of 5G services for Industrial users, enterprise users, etc., in a localized manner.

2.47 In view of the above, the Authority is of the view that it would be prudent to have a balanced approach, i.e., without disturbing the existing licensing regime for UL, a separate authorization under UL may be created for Access Network Provider. The Access Network Provider shall provide the network resources on wholesale basis to the Service Delivery Operators (VNOs), who may provide the services on retail basis to the end users. The existing TSPs may migrate to unbundled regime in order to focus on its core competence by outsourcing service delivery to VNOs. Therefore, if a Unified Licensee with Access Authorization wishes to migrate to segregated network layer and service layer regime, it should be permitted to do so.

2.48 One of the stakeholders suggested that the service area for Network Layer License should be at an All-India Level and the Network Provider be allowed to own, install, and operate all Network equipment whether Voice or Data on both access and long-distance routes. The Authority noted that as per the existing licensing regime, licensed service area of some of the authorizations is All India; however, this is not the case with some other authorizations for example, licenced service area under access authorization is circle based, for Internet it is All-India/Circle/District based. Moreover, access spectrum is assigned separately for each circle and such circle level allocation provides flexibility to the mobile operators in deciding their roll-out strategies. Therefore, the Authority is of the view that licensed service area for Access Network Operator may be kept same as that of the existing Access service authorization under Unified License.

2.49 Most of the stakeholders have suggested that the scope of Network Layer shall include installation, operation, and maintenance of Network, that is, Radio Access Network, Transmission system,

Backhaul, Core Network, etc. It would possess core network, and access to unique rights viz., right to spectrum, including access and backhaul, right to numbering scheme, and right to interconnection.

2.50 As regards Service delivery operator, the scope of license mentioned by most of the stakeholders is akin to that of VNO. However, it has been submitted that light-touch regulation should be adopted for the service delivery layer.

2.51 Creation of separate license for Network only layer is an attempt to segregate Network and Service delivery layer. Since service delivery layer already exists in the form of VNO, there appears to be no need for creating another category of license for service delivery. The VNO license defines the scope, roles, and responsibilities. However, the terms and conditions of the VNO license are mostly same as that of Unified License, as it has been created using the UL agreement as a template. Globally, the SDO layer is usually kept at the level of light-touch regulation. Most of the stakeholders in their comments have also submitted that VNO License should be simplified. Therefore, the Authority is of the view that there is a need to review the VNO License so as to simplify it and enable light-touch regulation. Simplification of VNO license to make it light on compliances will help in its uptake. However, review of VNO License is not under the scope of this consultation process; therefore, this may be taken up through a separate consultation process.

2.52 As regards scope, roles, and responsibilities of the separate Network only layer, the Authority is of the view that the scope of the Access Network Provider should be to establish and maintain access network, including wireless and wireline access network, and selling the network services (capable of carrying voice and non-voice messages and data) on a wholesale basis to VNOs (service delivery operators) for retailing purpose. The Access Network layer licensee should be permitted to have

capabilities to support all the services mentioned in the scope of Access Service authorization (Chapter VIII of UL).

2.53 To enable optimum utilization of the network resources, the Authority is of the view that the Access Network Provider should also be permitted to provide/share its network resources to/with telecom service providers who are licensees under section 4 of the Indian Telegraph Act, 1885, including Unified Licensees, and vice versa. This will enhance sharing of network resources and reduce cost of provision of telecom services in India.

2.54 Like Unified Licensee with access service authorization, the Access Network provider should also be permitted to acquire access spectrum and the terms and conditions should be same as that applicable to Unified Licensee with access service authorization i.e. as specified in the relevant Notice Inviting Application (NIA) for spectrum auction and the License Agreement. Further, the existing guidelines for spectrum sharing and spectrum trading should be suitably modified to permit spectrum sharing and spectrum trading between the Access Network Provider and the Unified Licensee with access service authorization. It would also have access to backhaul spectrum, numbering resources, right to interconnection, etc. Since the provision of service completely depend on the underlying network, the Access Network provider should be responsible for all the network related terms and conditions specified in the Access Service Authorization under Unified License. However, since Access Network Provider is not permitted to provide services directly to the end customers under this authorization, while creating the authorization chapter for Access Network Provider, the terms and conditions related to service delivery should be excluded.

2.55 In view of the forgoing discussion, **the Authority recommends that**

a) A separate authorization under Unified License should be created for Access Network Provider (network layer) to provide network services on wholesale basis. Under this

authorization for Network layer only, the Access network provider shall not be permitted to directly provide services to the end customers under the authorization.

b) Scope of the Access Network Provider shall be to establish and maintain access network, including wireless and wireline access network, and selling the network services (capable of carrying voice and non-voice messages and data) on a wholesale basis to VNOs (service delivery operators) for retailing purpose. The Access Network Provider should be permitted to have capabilities to support all the services mentioned in the scope of Access Service authorization (Chapter VIII of UL).

c) The Access Network provider should also be permitted to provide/share its network resources to/with the telecom service providers who are licensees under section 4 of the Indian Telegraph Act, 1885, and vice versa.

d) Licensed service area for Access Network Provider should be kept same as that of the existing Access service authorization under UL.

e) Access Network provider should be responsible for all the network related terms and conditions specified in the Access Service Authorization under Unified License. However, while creating the authorization chapter for Access Network Provider, the terms and conditions related to service delivery should be excluded.

f) Like Unified Licensee with access service authorization, the Access Network provider should also be permitted to acquire spectrum through spectrum auctions, subjected to the prescribed spectrum caps, enter into spectrum trading and spectrum sharing arrangement with the other

Access Network providers and unified licensees with Access service authorization. It should also have access to backhaul spectrum, numbering resources and the right to interconnection.

g) The existing licensing regime of Unified License shall be continued. However, if a licensee with Access Service Authorization under UL wishes to migrate to segregated network layer and service layer regime, it should be permitted to do so.

Issue 2: Should the Network Services Layer licensee be permitted to take the Service Delivery Category licenses and provide the service?

Comments received from the stakeholders

2.56 Most of the stakeholders were of the view that it is a business decision for Network Provider to provide services and it should be permitted to provide services directly to the end customers. While some of these stakeholders submitted that Network Provider should not need any additional license to provide the service from their own Network Service, others were of the view that the Network Provider should be permitted to take the Service Delivery Category license for provision of services to the end customers. Some of the stakeholders also submitted that Network Provider may be permitted to take the Service Delivery Category license for provision of service, with no worse off for the existing licensees.

2.57 Two stakeholders commented that the service delivery function be the exclusive right of the Access Service Providers as a Network provider may affect the service of its dependent service delivery licensees if it is allowed Service Delivery Category license to provide the service.

2.58 Some of the stakeholders suggested that the Regulatory framework should facilitate any forward and/or backward integration.

Analysis

2.59 The stakeholders are, in general, having consensus view that Network Provider shall be permitted for delivering the services. It has been submitted that it is a business decision for Network Provider to take Services Delivery Layer and get the value from the Service Delivery Layer.

2.60 It is noted that the Network layer is the most critical and capital-intensive layer and any company investing heavily on telecom network infrastructure and spectrum, should also have flexibility in deciding on

monetization of the network. As already discussed, a network provider will have to buy spectrum at a market determined price for provision of mobile services and will also have to fulfil the related minimum roll-out obligations. In case it is not allowed to offer services to end customers directly, monetization of network and spectrum resourced may not be in its control and the prospective operators may not find it viable. The Authority is of the view that it may not be appropriate to put in place any kind of licensing/regulatory barrier.

2.61 In view of the above, **the Authority recommends that the Access Network Provider shall be permitted to take a separate license under UL (VNO) framework for provision of services to the end subscribers.**

Issue 3: (a) If Network Services Layer licensee is permitted to take the Service Delivery Category licenses and provide the service, what kind of restrictions and safeguards are required to be built, in order to protect the competition and innovation in service delivery segment?

(b) In case network layer and service delivery layer are separated by creating separate category of license for Network only layer, what mechanism should be put in place to regulate the access to network services of Network layer licensees by the service delivery Category licensees? Whether certain obligations should be imposed on Network layer licensees to provide the network resources in a time-bound, transparent, and non-discriminatory manner?

(c) Whether certain obligations should be imposed on the existing Unified Licensees, and other measures should be taken to encourage UL licensees to provide their network resources to VNO licensees particularly in mobile service segment?

Comments received from the stakeholders

2.62 Many stakeholders were not in favour of prescribing mandatory obligations on proposed Network Layer Licensee for sharing their

network with service layer licensee. However, they were of the view that network service licensee should enable access to their network for all service delivery licensees on non-discrimination basis and in fair, equitable, transparent, and time-bound manner. One of the stakeholders further submitted that Net-Neutrality guidelines for non-discriminatory access to telecom resources should be implemented with due benchmarks for timelines of provisioning and configuring telecom resources and audits for detecting any wrong doings on part of the entity holding the license for Network services as well as a registered Service delivery entity.

2.63 Few stakeholders submitted that Network Operators should be mandated to provide the access to the service delivery providers (VNOs) in a time-bound, transparent, and non-discriminatory manner. One of these stakeholders further submitted that (i) Access to any Licensed SDO to be provided without any discrimination and unhindered in a time-bound manner, (ii) No degradation of all QoS parameters vis-à-vis its own service delivery and other's service delivery and (iii) Regular audits and checks to be prescribed and done by the independent auditors to verify all the Network-related parameters. Another stakeholder submitted that (i) At least 50% of the network capacity of the Network Provider be reserved for leasing to other service delivery licensees, (ii) the network capacity to be upgraded from time to time by the Network Service Layer Licensee and (iii) The network capacity to be leased to service delivery licensees on non-discriminatory basis.

2.64 Some of the stakeholders submitted that Arrangements between the Network Provider and Service Provider should not be mandated and must be left to a mutual agreement and market forces.

2.65 One of the stakeholders opined that it is a business decision for Network Provider to provide services, and it is not required to impose restrictions and safeguards on the Network provider as it is necessary for it to share its resources for viable return on its investments.

2.66 One of the stakeholders submitted that principles of level-playing field should be adopted. Another stakeholder suggested safeguard measures as no worse-off principle should be adopted for the current licensees and the scope of the existing licensees not to be reduced.

2.67 One of the stakeholders submitted that provisioning of network resources in a time-bound, transparent, and non-discriminatory manner should be governed by the license conditions and SLA between the Access Service Providers and the Network Layer Licensee. Another stakeholder submitted that integrated entity should not be allowed to offer terms more favorable to its own service delivery section as compared to other competing service providers.

2.68 One of the stakeholders suggested that the wholesale charges offered by the Unified Licensees to VNOs should be intimated to TRAI.

2.69 Some stakeholders submitted that proper checks and monitoring and audits need to be in place to avoid any discrimination and anti-competitive behavior towards VNOs.

2.70 One stakeholder was of the view that the licensing framework should be suitably modified to make the Network Service Layer (NSL) non-discriminatory. Certain generic products may be defined for NSL, and it should be possible for SDO to buy that product from NSL. NSL should be mandated not to deny such product or demand unreasonable level of pricing.

2.71 Some of the stakeholders suggested that the Regulatory framework should facilitate any forward and/or backward integration. In case of conclusively determined adverse effect on competition arising from vertical integration, across the network and service layer, the same may be addressed through ex-post facto regulatory interventions.

2.72 One of the Stakeholders submitted that the Network Services Layer needs to be non-discriminatory in nature and should be tariff regulated to ensure that the tariff is also non-discriminatory in nature.

Obligations on UL

2.73 Some of the stakeholders were of the view that the Unified Licensees should be mandated to provide access to the VNOs.

2.74 Many stakeholders submitted that sharing network capacity with VNO should be left to the requirement and the commercial arrangement between the two parties. Any mandate for TSPs for providing access to VNOs will act as a disincentive for the TSPs to actively invest for infrastructure development.

2.75 One of the stakeholders submitted that the regulatory policy should be to encourage the voluntary formation of MNO-MVNO relationships. If the prerequisites exist, there is no need for regulatory intervention. Another stakeholder submitted that the market forces are sufficient to ensure that VNO licensees are not discriminated against.

2.76 Some stakeholders submitted that the hypercompetitive market and existing tariffs are unsustainable, affecting all the service providers — NSOs and VNOs, which may be the reason for the reluctance of new players in entering the market.

2.77 One of the stakeholders submitted that there is no need for any regulatory intervention in business dynamics. Every entity must retain the flexibility of shaping their business strategy based on independent evaluations of business needs, instead of having regulations shape and drive their business strategy. The objective of regulation should instead be to facilitate the ease of doing business while ensuring proper and responsible functioning of markets.

2.78 One of the stakeholders submitted that if some intervention is desired, there can be a mandate for UL licensees to offer basic services to VNOs on non-discrimination basis and in fair and equitable manner.

2.79 One of the stakeholders was of the view that certain obligations, especially in terms of mandatory provisioning of bulk resources without any discrimination, should be imposed on the existing Unified Licensees. The spectrum NIA conditions, for roll-out obligations, can be amended to mandate a lower level of coverage area for the licensee and the balance should be covered through partnerships with bulk connectivity seekers such as VNO/private network users.

2.80 One stakeholder opined that Regulatory framework with a clear time-bound and transparent mandate must be fixed. This should be accompanied by Regulatory oversight to smoothen and streamline the roadblocks, if any. Encourage UL by approving softer license conditions for their service delivery segment. Another stakeholder submitted that mandate is not required; however, DoT/TRAI should frame yardstick of ensuring non-discriminatory access.

Analysis

2.81 While few stakeholders have suggested that it should be mandatory for UL/Network Providers to provide access to VNOs, many stakeholders are not in favour of prescribing a mandatory obligation for a Network Provider or UL licensee to provide access to a VNO. However, most of the stakeholders have submitted that the Network provider or UL licensee must provide service to VNOs in a transparent, fair, and non-discriminatory manner.

2.82 As already discussed, VNO regime is working well in all the layers except for mobile services. In case of mobile services, it would be very difficult to assess whether a UL/Network Providers licensee is having excess capacity in its network. Because of the very nature of mobile services, load on a part of the network or BTS depends on the mobile

subscribers latched on to it, which keeps changing with time. Therefore, it will be a techno-commercial decision of the licensee to assess that whether the excess capacity can be offloaded to a service delivery operator, or the excess capacity is needed to handle the surge traffic or the peak time load. Moreover, it is a business decision for a TSP to sell the services directly to the subscribers or through VNO. Therefore, the Authority is of the view that it may not be practically feasible to mandate the TSPs to share their network capacity with the VNOs. Having said that, to bring transparency in the entire process for VNO(s) seeking and entering into an agreement with Network provider or Unified Licensee. a broad framework may be created, prescribing the definite process in respect of application filing, application processing and defined timelines etc.

2.83 The framework should provide the process to be followed for applying for wholesale capacity/network resources along with the detailed proposal, process of acceptance/rejection by the Network Providers, along with the defined process and timelines, etc. In case of rejection of the proposal by a Unified Licensee, it should provide reasons and justification for such rejection. Detailed framework will bring in transparency, help in bringing accountability.

2.84 As regards suggestion made by one of the stakeholders that the wholesale price offered by the network operators (network provider and UL) to the service delivery operators should be regulated to ensure that the wholesale prices are also non-discriminatory in nature, considering that the retail tariffs for telecom services are largely under forbearance and prices are always better determined by the efficient market, the Authority has decided not to regulate the wholesale commercials offered to VNOs and leave it to the mutual agreement among the entities. Having said that, to ensure that terms and conditions (including commercials) offered to different VNOs are fair, transparent, and non-discriminatory, the Network Operators should be asked to declare their Reference Offer (including commercials) on their website, which could

serve as a basis for mutual negotiations between the Unified Licensee and the VNO, taking into account the factors such as area of operation of VNO, traffic commitment, quality of service commitment, etc. Further, the Unified Licensees (including the Authorization for Access Network provider) should be asked to submit an annual self-certification to the Licensor certifying the adherence to prescribed framework. In case of adoption of unfair practices by the Unified Licensees (including Access Network Providers), VNO may approach the Licensor with complete details and related documents, which may be examined by the Licensor on case-to-case basis and the Licensor, if desired, may seek the views of TRAI. **The Authority is of the view that having such a regime in place will bring in transparency in the entire process. However, if need arises in future, the Authority may review this decision.**

2.85 The Authority is also of the view that the Licensor and TRAI should be updated on the agreements taking place between the Unified Licensees and VNOs. Therefore, after entering into an agreement for service delivery, it should be the joint responsibility of the UL-VNO licensee and Network Provider/Unified Licensee to submit a copy of the agreement and their subsequent modifications, if any, to the Licensor as well as to TRAI within 15 days of signing the agreement or carrying out modifications thereof.

2.86 In view of the forgoing discussion, **the Authority recommends that to bring in transparency and accountability in the entire process for VNO(s) seeking and entering into an agreement with the Access Network provider or the Unified Licensee, a broad framework should be prescribed, including the definite process in respect of application filing, application processing, defined timelines, etc. The framework should provide the process to be followed for applying for wholesale capacity/network resources along with the detailed proposal, process of acceptance/rejection by the Unified Licensees (including Access Network Providers), along with defined**

timelines, etc. The key elements to be included in the framework are:

a) **To ensure that the terms and conditions offered to different VNOs are fair, transparent, and non-discriminatory, the Unified Licensee shall declare their Reference Offer (including commercials) on their website.**

b) **The Unified Licensee shall offer the wholesales services to different VNO(s), including VNO owned/promoted by itself, in transparent, fair, and non-discriminatory manner.**

c) **For submission and processing of application from VNOs, the Unified Licensees should provide a web-based online portal. Physical exchange of application, documents confirmations etc. should not be allowed.**

d) **The service delivery operator i.e., VNO shall make request to the Unified Licensee through online portal of the concerned Unified Licensee along with detailed proposal. The online portal should generate an acknowledgement of receipt of application and sent it to the e-mail IDs provided by the applicant and also place a copy on the portal with digital date and time stamp.**

e) **The Licensee shall share the feasibility status clearly stating acceptance/rejection (with reasons thereof, in case of rejection) of the proposal, through the online portal, with the Applicant party within 30 days. In case any additional information is required by the Unified Licensee, the Applicant may be asked for the same within 15 days of date of receipt of the application and in such case, the 30 days' time will begin from the date of provision of additional information by the Applicant.**

f) **Unified Licensee should be asked to submit an annual self-certification to the licensee certifying the adherence to the prescribed framework.**

g) **After entering into an agreement for service delivery, it should be the joint responsibility of the UL-VNO licensee and Unified Licensee to submit a digital copy of the agreement and their subsequent modifications, if any, to the Licensor as well as to TRAI within 15 days of signing the agreement or carrying out modifications thereof, through online mode.**

Issue 4: What incentives (for example, lower license fee, lower SUC, etc.) could be provided to Network Layer licensees in the new unbundled licensing regime to encourage the investment in the Network layer?

Comments received from the stakeholders

2.87 Some of the stakeholders submitted that considering extreme capital-intensive nature of Network services licensees, fees, and revenue share, etc., may be lowered significantly to ensure that NSOs are not over-loaded with heavy commercial compliance burden. One of the stakeholders suggested that the Network Layer licensee may be exempted from any license fee.

2.88 Some stakeholders were of the view that Licensee fee and spectrum charges should be uniform for all Licensees. Further, rationalization and simplification of levies imposed on TSPs is required to be carried out and no worse-off principle be adopted for the current licensees. One of these stakeholders suggested that regulatory Levies be rationalized (LF and SUC at a composite 1%) in the existing licensing framework.

2.89 One of the stakeholders submitted that the licensing regime should be uniform with the same services being subject to the same rules. Principle of level-playing field should be adopted.

2.90 Some stakeholders suggested that simple administrative fee of 1% of the Audited Gross Revenue on the basis financial results of the TSP should be charged annually in addition to the GST that is levied on the sale of services.

2.91 One stakeholder submitted that the entry fee and value of PBG and FBG may be reduced by 75%. LF may be reduced by USO levy as VSAT is mainly used in rural areas, SUC @ 1% irrespective of data rate, satellite bandwidth charges paid to ISRO be allowed as pass through charges.

2.92 One of the stakeholders submitted that expenses such as the LF, Financial BGs, SUC and AGR should not be charged twice from different layers so that new layer operators have an incentive to offload or separate the Service Delivery from Network service for new providers and foreign investors.

2.93 One of the stakeholders argued for removal of multiple levies of License Fee in B2B. The definition of revenue under the telecom license needs to permit charging of license fee on the principle of value addition, to prevent cascade impact on consumers resulting in levy at multiple levels. Removal of multiple levies of License Fee in other telecom licensees (ILD, NLD, ISP, Access) is also in line with the policy objectives of NDCP 2.1(b)(ii).

2.94 One of the stakeholders suggested that light-touch licensing is required for all categories of the licensees.

Analysis

2.95 Many stakeholders have submitted that to encourage investment in Network only layer, the regulatory levies and compliances should be kept at minimum. Other stakeholders have also made submissions in favour of rationalization of regulatory levies and compliances, not only for Network only layer but for all the existing licensees as well. Some of the stakeholders have also mentioned that level-playing field between same services under different licenses should be ensured, no worse-off principle should be adopted for the current licensees.

2.96 The Authority concurs with the views of the stakeholders that there is a need of rationalization of regulatory levies; however, for ordered growth of the sector, level playing needs to be maintained between similar players in the market. Therefore, any change in levies for Network only layer should also be made for UL licensees. Prescription of differential (reduced) levies for Network Operator could create a possibility of arbitrage. Thus, to maintain level-playing field and to mitigate any possibility of arbitrage opportunity, it is important that the Government taxes and levies are kept same for the existing (integrated) licensing regime and proposed unbundled license regime. Therefore, **the Authority recommends that the License Fee and Spectrum Usage charges applicable for the Access Network Provider Authorization should be the same as that applicable to the Access Service Authorization under Unified License.**

2.97 Further, since scope of network provider is limited to provision of network and it does not include provision of service directly to the subscribers, the financial conditions such as entry fee, net worth requirement, bank guarantee, etc., for the Access Network authorization should be rationalized accordingly and be kept slightly lower than that of Access Service authorization under Unified License. It is noted that not much time has elapsed after introduction of existing licensing regime (UL was introduced in 2013 and UL (VNO) in 2016),

wherein the requirement of entry fee, net worth requirement, bank guarantee, etc., were also mentioned. Creation of separate authorization for Access Network Provider is an attempt to segregate network only layer from the integrated (Network + Service) layer for Access service provision, and service delivery layer has already been introduced in 2016 in the form of VNO. Since, the combined scope of Access Network Provider and UL-VNO (Access service) is equal to the scope of a Licensee with Access Service authorization under UL, the Authority is of the view that the financial conditions' requirements such as Minimum Equity, Minimum Net worth, Entry Fee, and FBG/PBG requirements for the proposed Access Network provider authorization may be arrived at by deducting the amounts prescribed for UL (VNO-Access Service) from the amount prescribed for UL-Access Service authorization.

2.98 In view of the above, **the Authority recommends that since the combined scope of Access Network Provider and UL-VNO (Access service) is equal to the scope of a Licensee with Access Service authorization under UL, the Minimum Equity, Minimum Net worth, Entry Fee and FBG/PBG requirements for the proposed Access Network provider authorization may be arrived at by deducting the amounts prescribed for UL (VNO-Access Service) from the amount prescribed for UL-Access Service authorization.**

2.99 As regards demand for rationalization of levies, bank guarantees and regulatory compliances, in general, it is noted that it does not fall under the scope of this consultation process. Having said that, the Authority has been giving recommendations for rationalization of AGR, reduction of USOF contribution in licence fee, etc. In this regard, it may be worth mentioning that TRAI in its recommendation on '*Definition of Revenue Base (AGR) for the Reckoning of License Fee and Spectrum Usage Charges*', dated 6th January 2015, recommended that the component of USO levy should **be reduced from the present 5% to 3% of AGR** for all licenses with effect from 1st April 2015. With this reduction, **the**

applicable uniform rate of license fee would become 6% (from the present 8%) of AGR viz. the 3% of License Fee that directly accrues to the Government will not change.

2.100 TRAI had also proposed to DoT that they may take up with the Ministry of Finance (MoF) the issue of reduction in GST rate from 18% to flat 5% by declaring telecom sector as core infrastructure industry and economy enabler in India.

2.101 It is also noted that the National Digital Communications Policy, 2018, under 'Propel India' mission envisages one of the strategy as "Reforming the licensing and regulatory regime to catalyse Investments and Innovation, and promote Ease of doing business", within which one of the action plan is "Enabling Network of different layers (e.g., infrastructure, network, services and application layer) through differential licensing" and another action plan is "Reviewing of levies and fees, including LF, SUC and the definition of AGR and rationalisation of Universal Service levy".

2.102 In view of the above, the Authority is of the view that DoT should consider rationalization of government levies for all the Telecom Licenses and if required, a reference may be sent to TRAI.

Issue 5: Whether service delivery category licensees be permitted to parent with multiple Network Service layer licensees?

Comments received from the stakeholders

2.103 Many stakeholders were in favor of allowing multi-parenting in access segment. One of these stakeholders submitted that multi-parenting should be allowed for access service authorization which is currently not permitted. This impinges on the ability of a VNO to effectively compete in the market by tying its fate to a single access service provider and restricting choice, technology to customers. Another stakeholder submitted that use cases that require multi-parenting are

Mobile Bank ATM, Enterprise network requiring redundancy, Emergency Services such as Fire.

2.104 One of the stakeholders submitted the two possible solutions for dual parenting as given below. Technical feasibility and SIM related issues can be assessed based upon the existing roaming arrangements between various operators. It needs deep examination on technical parameters of the Network by the TEC and how all the technical parameters of the network will work in such scenarios.

a) If the regulation allows for dual or multi-parenting of NSO's for VNO, VNO can buy the airtime, SIMs (MSISND/IMSIs) from respective NSOs. VNO will maintain the consumers based on the respective NSO SIMs and no switchover between NSOs is possible from the consumer perspective.

b) If the VNO allowed to act as semi–Full MVNO i.e., VNO's granted with Number resources (MCC/MNC and CCNDC) independent of NSOs, VNO will have freedom to integrate with multiple NSOs in the same Circle and provide the services to the consumers. Consumer will be allowed to switchover to different NSOs which are partnered with VNO wherever they found better coverage.

2.105 One of the stakeholders submitted that the possibility of MVNOs having multiple MNOs as parent network can be explored. Technical feasibility needs to be worked out to ensure uniqueness of a network provider for any specific phone model/SIM card, as applicable. Separate consultation should be held with the stakeholders to evaluate the technical feasibility and benefits associated with the same.

2.106 Another stakeholder submitted that the Authority may reassess the reasons why this restriction was recommended and implemented earlier. If the rationale still holds, there is no need to change the position. Further, the underlying issue is of mandate vs. mutual

agreement and for any change, the whole regime of licensing cannot be changed.

Analysis

2.107 Multi-parenting is where a VNO is allowed to enter into agreement with more than one Network Service Operator (NSO). So far, VNOs are allowed to have agreements with more than one NSO for all services other than Access services and such services which need numbering and unique identity of the customers.

2.108 As highlighted by one of the stakeholders, multi-parenting could be of two types:

a) VNO can buy the airtime, SIMs (MSISND/IMSIs) from respective NSOs. VNO will maintain the consumers based on the respective NSO SIMs and no switchover between NSOs is possible from the consumer perspective.

b) If VNO's are granted Number resources (MCC/MNC and CCNDC) independent of NSOs, VNO will have freedom to integrate with multiple NSOs in the same Circle and provide the services to the consumers. Consumer will be allowed to switchover to different NSOs which are partnered with VNO wherever they found better coverage.

2.109 First type of multi-parenting may not have compliance related issues but at the same time it may not have much benefit also. However, as highlighted by some of the stakeholders, technical feasibility needs to be worked out to ensure uniqueness of a network provider for any specific phone model/SIM card, as applicable.

2.110 Second type of multi-parenting MVNO basically works on a roaming agreement with MNOs for the radio network. The SIM can switch between the parented mobile networks based on the signal strength. If a VNO gets into agreement with all the TSPs, it will result in a situation

where VNO becomes a kind of super operator, providing the maximum possible coverage and best QoS. The VNO will also control routing of traffic to an MNO when signal strength of more than one MNOs is similar. Moreover, no customer would like to take service from any of the TSP. Such a situation can arise even if a VNO gets into agreement with two TSPs and its combined coverage is more than any individual TSP. Allowing such kind of multi-parenting could also lead to a situation where a VNO is offering services using the spectrum of more than one TSP and the combined spectrum of those TSPs may be more than the prevailing spectrum cap. Moreover, one of the pre-requisites is that VNO should have been allocated numbering resources. It may be worth noting here that the Licence agreement issued to UL-VNO clearly mentions that an NSO shall allocate a numbering range to their VNO(s) from the numbering range allocated to it by the licensor.

2.111 TRAI in its earlier recommendations for UL (VNO) of 2015 had made this restriction of parenting with only one TSP in a LSA for access services, mentioning that allowing VNO to have agreement with more than one NSO in a LSA may lead to operational complexities like compliance of lawful interception, spectrum usage charges, etc.

2.112 In view of the above, many issues may be involved which would need to be examined carefully before taking any decision in this regard. Allowing multi-parenting at this stage could make things more difficult for VNOs to make space in mobile segment. Therefore, **the Authority is of the view that at this stage allowing multi-parenting may not result in promoting VNOs in mobile segment; however, the same can be reviewed after implementation of License for Network only layer, or when the time is found to be appropriate.**

CHAPTER 3

SUMMARY OF RECOMMENDATIONS

3.1 The Authority recommends that

a) A separate authorization under Unified License should be created for Access Network Provider (network layer) to provide network services on wholesale basis. Under this authorization for Network layer only, the Access network provider shall not be permitted to directly provide services to the end customers under the authorization.

b) Scope of the Access Network Provider shall be to establish and maintain access network, including wireless and wireline access network, and selling the network services (capable of carrying voice and non-voice messages and data) on a wholesale basis to VNOs (service delivery operators) for retailing purpose. The Access Network Provider should be permitted to have capabilities to support all the services mentioned in the scope of Access Service authorization (Chapter VIII of UL).

c) The Access Network provider should also be permitted to provide/share its network resources to/with the telecom service providers who are licensees under section 4 of the Indian Telegraph Act, 1885, and vice versa.

d) Licensed service area for Access Network Provider should be kept same as that of the existing Access service authorization under UL.

e) Access Network provider should be responsible for all the network related terms and conditions specified in the Access Service Authorization under Unified License. However, while creating the authorization chapter for

Access Network Provider, the terms and conditions related to service delivery should be excluded.

f) Like Unified Licensee with access service authorization, the Access Network provider should also be permitted to acquire spectrum through spectrum auctions, subjected to the prescribed spectrum caps, enter into spectrum trading and spectrum sharing arrangement with the other Access Network providers and unified licensees with Access service authorization. It should also have access to backhaul spectrum, numbering resources and the right to interconnection.

g) The existing licensing regime of Unified License shall be continued. However, if a licensee with Access Service Authorization under UL wishes to migrate to segregated network layer and service layer regime, it should be permitted to do so.

[Para 2.55]

3.2 The Authority recommends that the Network Provider shall be permitted to take a separate license under UL (VNO) framework for provision of services to the end subscribers.

[Para 2.61]

3.3 The Authority recommends that to bring in transparency and accountability in the entire process for VNO(s) seeking and entering into an agreement with the Access Network provider or the Unified Licensee, a broad framework should be prescribed, including the definite process in respect of application filing, application processing, defined timelines, etc. The framework should provide the process to be followed for applying for wholesale capacity/network resources along with the detailed proposal, process of acceptance/rejection by the Unified Licensees

(including Access Network Providers), along with defined timelines, etc. The key elements to be included in the framework are:

a) **To ensure that the terms and conditions offered to different VNOs are fair, transparent, and non-discriminatory, the Unified Licensee shall declare their Reference Offer (including commercials) on their website.**

b) **The Unified Licensee shall offer the wholesales services to different VNO(s), including VNO owned/promoted by itself, in transparent, fair, and non-discriminatory manner.**

c) **For submission and processing of application from VNOs, the Unified Licensees should provide a web-based online portal. Physical exchange of application, documents confirmations etc. should not be allowed.**

d) **The service delivery operator i.e., VNO shall make request to the Unified Licensee through online portal of the concerned Unified Licensee along with detailed proposal. The online portal should generate an acknowledgement of receipt of application and sent it to the e-mail IDs provided by the applicant and also place a copy on the portal with digital date and time stamp.**

e) **The Licensee shall share the feasibility status clearly stating acceptance/rejection (with reasons thereof, in case of rejection) of the proposal, through the online portal, with the Applicant party within 30 days. In case any additional information is required by the Unified Licensee, the Applicant may be asked for the same within 15 days of date of receipt of the application and in such case, the 30 days' time will begin from the date of provision of additional information by the Applicant.**

f) **Unified Licensee should be asked to submit an annual self-certification to the licensee certifying the adherence to the prescribed framework.**

g) **After entering into an agreement for service delivery, it should be the joint responsibility of the UL-VNO licensee and Unified Licensee to submit a digital copy of the agreement and their subsequent modifications, if any, to the Licensor as well as to TRAI within 15 days of signing the agreement or carrying out modifications thereof, through online mode.**

[Para 2.86]

3.4 The Authority recommends that the License Fee and Spectrum Usage charges applicable for the Access Network Provider Authorization should be the same as that applicable to the Access Service Authorization under Unified License.

[Para 2.96]

3.5 The Authority recommends that since the combined scope of Access Network Provider and UL-VNO (Access service) is equal to the scope of a Licensee with Access Service authorization under UL, the Minimum Equity, Minimum Net worth, Entry Fee, and FBG/PBG requirements for the proposed Access Network provider authorization may be arrived at by deducting the amounts prescribed for UL (VNO–Access Service) from the amount prescribed for UL-Access Service authorization.

[Para 2.98]

Annexure-I

Government of India
Ministry of Communications
Department of Telecommunications
Access Services Wing
Sanchar Bhavan, 20, Ashoka Road, New Delhi-110001

No: 20-281/2010-AS-I Vol. XII (pt.) Date:08.05.2019

To,
The Secretary,
Telecom Regulatory Authority of India,
Mahanagar Doorsanchar Bhawan,
Jawaharlal Nehru Marg, Old Minto Road,
New Delhi-110002

Subject: Seeking recommendations of TRAI on strategies of National Digital Communications Policy, 2018 - reg.

The National Digital Communications Policy, 2018 (hereinafter, referred to as, the NDCP, 2018) of the Government of India envisages, *inter-alia*, the following strategies under its 'Connect India' and 'Propel India' missions:

"

1. Connect India: Creating a Robust Digital Communications Infrastructure

...

Strategies:

1.1 Establishing a 'National Broadband Mission – Rashtriya Broadband Abhiyan' to secure universal broadband access

...

(j) By Encouraging innovative approaches to infrastructure creation and access including through resale and Virtual Network Operators (VNO)

2. Propel India: Enabling Next Generation Technologies and Services through Investments, Innovation, Indigenous Manufacturing and IPR Generation

...

Strategies:

...

2.1 <u>Catalysing Investments for Digital Communications sector:</u>

...

(b) Reforming the licensing and regulatory regime to catalyse Investments and Innovation, and promote Ease of Doing Business by:

...

v. Enabling unbundling of different layers (e.g. infrastructure, network, services and application layer) through differential licensing

...

(c) Simplifying and facilitating Compliance Obligations by:

...

v. Reforming the Guidelines for Mergers & Acquisitions, 2014 to enable simplification and fast tracking of approvals

...

viii. Creating a regime for fixed number portability to facilitate one nation – one number including portability of toll free number, Universal Access Numbers and DID numbers

...

2.2 <u>Ensuring a holistic and harmonized approach for harnessing Emerging Technologies</u>

...

(e) Ensuring adequate numbering resources, by:

...

ii. Developing a unified numbering plan for fixed line and mobile services

..."

2. Telecom Regulatory Authority of India is, hereby, requested to furnish recommendations, under the terms of the clause (a) of sub-section (1) of Section 11 of the Telecom Regulatory Authority of India Act, 1997 (as amended), in respect of the afore-mentioned items of the NDCP, 2018.

3. For sake of convenience, the strategies/ items under strategies of the NDCP, 2018, on which recommendation of TRAI are being sought, are summarized below:

(a) Strategy 1.1 (j) of 'Connect India' mission,

(b) Item (v) under Strategy 2.1 (b) of 'Propel India' mission,

(c) Items (v) & (viii) under Strategy 2.1 (c) of 'Propel India' mission, and,

(d) Item (ii) under Strategy 2.2 (e) of 'Propel India' mission.

4. This issues with the approval of the Secretary, Department of Telecommunications, Government of India.

8/5/19

(S.B. Singh)
Deputy Director General (AS)
Tel: 011-23036918

Annexure-II

INTERNATIONAL PRACTICES

I. *Australia*

1. Australian Communications and Media Authority (ACMA) regulates the communications and media services in Australia, and distinguishes between the carriers and carriage service providers. Telecommunication or carriage services can be provided by carriers or carriage service providers.

2. *Carriers:* Carriers or carrier providers are the owners of Telecommunications 'Network Unit' to supply the carriage services. Telecommunications' companies need carrier licenses or nominated carrier declarations (NCD) to operate facilities (transmission infrastructure cabling, wireless networks, satellite facilities), to supply telecommunications services to the public, such facilities are called "network units". Through NCD, infrastructure owner nominates a carrier to operate its facilities, and, thereby, a license holder accepts responsibility for the network units as an owner for their operation. The licensed carrier applies for the NCD to the ACMA, and the owner of the network unit does not require a carrier license. There are no restrictions on the number of carriers' licenses issued by the ACMA. A carrier can also be a carriage service provider as it does not require a license, and there is no prohibition.

3. Carrier that operates radiocommunications' equipment for the purpose of supplying carriage needs to have spectrum license. Usually, spectrum licenses are auctioned and are valid up to 15 years. Spectrum license can also be traded (or in parts of it) with others.

4. Carriers are obliged to provide access to their telecommunications' infrastructure if other carriers request this on reasonable terms. They must comply with the standard access obligations under the Competition and Consumer Act 2010. Under this Act, the ACCC (Australian Competition and Consumer Commission) facilitates access

to the networks of carriers and carriage service providers. This includes declaring services for access, approving access codes and access undertakings, arbitrating disputes about declared services, and registering access agreements.

5. The standard carrier license conditions set out an obligation regarding access to facilities, and network information of other carriers. The carrier must provide other carriers with access to their facilities for enabling them to provide facilities and carriage services or establish their own facilities. There is an additional facilities' access condition, which requires carriers to provide other carriers with access to the telecommunications' transmission towers, sites, and underground facilities, if technically feasible.

6. The number of Licensed Carriers (April 2020) and Nominated Carrier declaration (March 2020)[1] are:

Licensed Carriers	Number
Total carrier licences granted	**535**
Active	305
Surrendered	203
Cancelled	27

Nominated Carrier declaration	Number
Total NCDs granted	**167**
Active	89
Revoked	78

7. *Service Providers:* There are two types of service providers: Carriage Service Providers and Content Service Providers. Carriers provide the basic transmission infrastructure on which carriage and content services are supplied to the public.

    - A *carriage service provider* uses carriers' facilities, and does not have its own network units to supply telecommunications' services to the public such as phones and the Internet. Carriage Service Providers include organisations that resell time on a

[1] https://www.acma.gov.au/register-carrier-licences-and-nominated-carrier-declarations

carrier network for phone calls, provides access to the internet (ISPs), provides phone services over the internet (VoIP service providers).

- A *content service provider* supplies content services to the public (for example, a pay TV service).

8. Service providers don't need individual licences, but they must comply with the Telecommunications Act 1997 including an obligation to join the Telecommunications Industry Ombudsman[2] (TIO) scheme, access obligations, and other types of service provider rules imposed by ACMA.

9. Carriers and carriage service providers must comply with any ACMA pre-selection determinations. The Determinations require telecommunication networks and facilities operated by a carrier or carriage service provider to permit an end user to: (1) pre-select another carriage service provider as the end user's preferred carriage service provider for specified national and international calls, operator assisted services, and calls to mobile telephones, and (2) change the selection from time to time through a written request. Such networks and facilities must also provide override dial codes for selecting alternative carriage service providers for pre-selectable calls on a call-by-call basis.

10. *Radio Communication Licenses:* It is needed to use the radiocommunications' equipment, and there are three categories of radiocommunications licenses – Apparatus, Class, and Spectrum.

    - *Apparatus Licenses:* It is needed to operate certain types of transmitters and receivers and are usually given for one year, which can be renewed. There are 16 transmitter licenses, which may be an assigned license (frequency is allocated) or a non-assigned license (frequency shared with other users) and five receiver licenses, which are assigned licenses.

[2] https://www.tio.com.au/about-us

- *Class License:* There are 15 Class Licenses for the use of common radio equipment on shared frequencies. There is no need to apply for a class license, and there are no license fees.
- *Spectrum Licenses:* It allows the use of range of radio devices in a specific geographical area and frequency band. These are valid for up to 15 years and are usually auctioned, however, they can be traded (or in parts of it) with others.

11. *Area-wide Apparatus License:* The ACMA has proposed a new transmitter and receiver license type, referred to as the area-wide apparatus license (AWL) type. The AWL type is intended to authorise the operation of one or more radiocommunications' devices within a defined geographic area at a specified frequency(ies). This license type will be scalable, enabling its use for different-sized geographic areas and bandwidths, and will be capable of authorising a variety of fixed and mobile services, uses, applications, and technologies.

II. South Africa

12. In South Africa, licensing framework[3] for telecommunications is contained in the Electronic Communications Act, 2005. The main service licenses can be categorised as:

(a) Electronic Communication Services
(b) Broadcast Services
(c) Postal Services

For Electronic Communication Services, ICASA grants individual licenses for electronic communications network services (ECNS), and electronic communications services (ECS).

13. *Electronic Communication Network Service (ECNS):* This service makes available an Electronic Communications Network (ECN), either by sale, lease or otherwise. ECN is the system of electronic communications facilities (in line with the technologically neutral licensing framework),

[3] https://www.icasa.org.za/pages/services-licencing

and may include satellite systems, fixed and mobile systems, fibre-optic cables, and electricity cable systems. There are two categories of ECNS licenses, namely, Class ECNS license and Individual ECNS license.

- *Individual ECNS (I-ECNS)* licensees operates for commercial purposes on a provincial and/or national scope, and is issued for 20 years.
- *Class ECNS (CECNS)* licenses are limited to a local or district municipal scope geographical area (for example, the City), and is issued for 10 years.

There are presently 418 Individual ECNS licenses and 1,065 Class ECNS licenses in South Africa. However, not all licensees are operational.

14. Electronic Communications Services (ECS): Any service provided to the public, the state, or the subscribers by any means of electronic communications over an ECN, but excludes broadcasting services. ECS licensee may provide services to customers over its own or a third-party's network. There are two categories of ECS licenses, namely, Class ECS license and Individual ECS license.

- *Individual ECS (I-ECS)* licensees provide all forms of electronic communications on a provincial and/or national scope. It is Issued for 20 years and can be applied in response to Invitation to Apply (ITA). They provide ECS that consists of voice telephony utilising numbers from the national numbering plan and operated on a national level.
- *Class ECS licenses (C-ECS*) allows holder to provide the same services as those authorised in terms of and individual ECS license, including voice services within a particular geographical area (for example, the City). Such licensee does not have the right to apply for numbers from the Authority's national numbering plan. For C-ECS licenses, the registration notice can be lodged with the Authority at any time. It is issued for 10 years.

There are presently 466 Individual ECS licenses and 939 Class ECS licenses. However, all are not operational.

15. Licensee can make use of its own ECN if it holds the requisite ECN license or it can enter into agreements with the third-party ECNS licensees to carry the services to the customer.

16. *ECS Vs ECNS types:*

Criteria	Electronic Communications Network Services (ECNS)	Electronic Communications Services (ECS)
Wholesale vs. retail	An ECNS licensee wholesales network capacity to ECS licensees or other ECNS licensees for resale, but it does not deal with the public.	An ECS licensee offers retail services to the public (and may also provide wholesale services for resale to third parties).
Physical vs. virtual networks	An ECNS licensee operates physical networks made of facilities such as fibre or base stations.	An ECS licensee operates virtual networks such as VPNs and MPLS networks.

17. The Electronic Communications Act 2005[4] as amended in 2014[5] makes it an obligation for any licensed entity on request to interconnect and to lease electronic communications facilities with any other person licensed in terms of the ECA unless the request is unreasonable. ECNS licensees can enter into commercial arrangements with other licensees to allow them to use the electronic communications network owned and operated by the ECNS licensee. The Electronic Communications Facilities Leasing Regulations, 2010, prescribes the processes for requesting, negotiating, and enforcing facilities leasing agreements. The lease of electronic communications facilities by an ECNS licensee should be transparent and non-discriminatory, as among comparable types of electronic communications facilities being leased and not be of a lower technical standard and quality than the technical standard and quality provided by such ECNS licensee to itself or to an affiliate or in any other way discriminatory compared to the comparable network services provided by such licensees to itself or an affiliate. Facilities

[4] https://www.icasa.org.za/uploads/files/Electronic-Communications-Act-2005.pdf
[5] https://www.icasa.org.za/uploads/files/ECA2014.pdf

leasing agreements only become enforceable when approved by ICASA, and facilities leasing agreements are made publicly available. The requests for leasing of essential facilities are deemed to promote efficient use of electronic communication networks and services.

18. The Electronic Communications Facilities Leasing Regulations, 2010, require the request to be in writing along with required technical specifications. It provides for a fixed period of 45 to 60 days for parties to negotiate and agree on the terms of leasing the ECN facilities. However, ICASA (Independent Communications Authority of South Africa) does not regulate the cost of access to facilities. ECNS licensees are required to lease facilities or infrastructure where it is technically and economically feasible on a non-discriminatory basis. However, the ECNS licensees are not obliged to sell wholesale capacity to other licensees, but selling of wholesale capacity in the form of national roaming, wholesale APN (including Mobile Virtual Network Operators), etc., is prevalent. In other words, ECNS licensees can enter into commercial arrangements with other licensees to allow them to use the electronic communications network owned and operated by the ECNS licensee.

19. All facilities leasing agreements must be filed with ICASA and are considered effective and enforceable on filing. ICASA is empowered to adjudicate facilities leasing agreement disputes that are referred to it in terms of the Facilities Leasing Regulations.

III. Uganda

20. Uganda Communications Commission (UCC) recently came out with the new licensing regime in January 2020. The Objective of the New Framework includes easy market entry, and increase competition, effective utilization of resources, increased broadband roll-out, and enhance local ownership. The new framework comprises of National Telecom Operators (NTOs), Public Infrastructure Providers (PIPs), and Public Service Providers (PSPs).

21. *National Telecom Operator (NTO):* The NTO license allows to establish and provide both telecommunication infrastructure and services across the entire country for 20 years. However, it must at minimum cover and provide service in 95% of the geographical area of Uganda. NTOs are eligible for national spectrum allocation based on technical expansion/development plan, legal and regulatory framework, public interest and availability of the respective resources. For NTOs, it is:

- Obligatory to host and/or provide infrastructure services to PSP for regional and national roll-out of services within their respective licensed zone.
- Obligatory to host and/or lease to or from National Operator and/or PIP for network roll-out and provision of infrastructure within licensed zones.
- Obligatory to share active and passive infrastructure, including National roaming.

22. *Public Infrastructure Providers (PIPs):* PIPs are licensed to roll out and provide infrastructure nationally (NPIP) or regionally (RPIP) for 15 years. These will be eligible for spectrum allocation subject to availability in licensed regions based on the expansion plan, legal and regulatory framework, public interest, and availability of respective resources. They shall lease to and from NTOs and PIPs for roll out of infrastructure in licensed zones. However, licensee is not allowed to provide services to final consumers, except where the operator also holds a PSP license. It is obligatory to host and/or provide infrastructure services to PSP for roll out of services. It is also obligatory to share active and passive infrastructure including national roaming.

23. *Public Service Providers (PSPs):* PSPs are licensed to operate telecommunication services, provide all communication VAS, and capacity resale services nationally (NPSP) or regionally (RPSP) for five years. They need to obtain infrastructure services from NTOs and PIPs in licensed areas, and licensee shall not be allowed to install or otherwise provide infrastructure services. Licensee shall not be eligible for spectrum assignment.

24. When an Operator requires two National operator licenses, i.e., NPSP and NPIP, such operator shall obtain NTO. Spectrum shall be assigned only to NTO, NPIP, and RPIP license holders and other licensees shall be required to roam on NTO, NPIP, and RPIP infrastructures.

25. For migration to new licensing regime, all existing operators have to indicate the category of license(s) for which they wish to be considered. However, they are allowed to continue operating in accordance with the terms and conditions of their existing licenses for six months. As on 01st April 2020[6], there are 33 licensees. Among them, there are 2 NTOs, 4 PIPs, 15 PIP & PSPs, 12 PSPs (6 PSP – Capacity Resale, and 6 PSP – Voice and Data).

26. As per the license agreement, the Licensee shall grant access to its systems and facilities to Licensed operators and authorised service providers under the agreed technical and commercial terms and conditions. All written access agreements are to be approved by the Licensor. Access shall include the provision by the Licensee of any systems, services, or arrangements through which another operator or authorised service provider is able to directly or indirectly make use of (i) any network resource(s) or service(s) provided; or (ii) any facilities comprised in the provision of services. The Licensee may decline to offer access services only where the Licensee demonstrates to the Licensor that its existing network resources or facilities are inadequate for the provision of services sought to be provided by the access seeker through the Licensee's network or system. The access Agreement is to be executed within 30 (thirty) days of the receipt of a request from the access seeker and Licensee to ensure access to its network within 30 (thirty) days after the execution of the access agreement. In case of failure in reaching mutual Agreement within the specified period, the Licensor may receive and investigate any complaint(s) and make a decision thereon in accordance with the Act and Regulations.

27. In case of wholesale services, it is restricted to telecommunication service providers and the Licensee will ensure wholesale of

[6] https://www.ucc.co.ug/list-of-telecom-providers/

telecommunication services is undertaken fairly, reasonably and in a non-discriminatory manner for which the licensee will make a decision and complete negotiations within 45 (forty-five) days from the date of receipt of a request from an applicant. The Licensee may decline to offer wholesale services only in cases where the Licensee demonstrates that the existing network resources or facilities are inadequate for the provision of telecommunication service by the Licensee. Where the Licensor and applicant for wholesale services fail to reach a mutual Agreement within the specified period, the Licensor may receive and investigate any complaint referred to the Licensor arising out of the said matter and make a decision thereon.

28. The terms and conditions on the access services Agreement and wholesale services Agreement will include rights, duties, and responsibilities of the contracting parties which are clear and reasonable; technical details regarding the telecommunication network or services to be used in the operations; standards and quality of access or wholesale services; utilization, maintenance or measures on information protection for a fair provision and receipt of access services; provisions which do not directly or indirectly force either contracting party to unfairly restrict their services or to limit their discretion to obtain, give or receive services from any other parties; provisions which do not monopolize, reduce or restrict competition in the business operations of either the contracting party or a third party. The copy of the Agreement is to be submitted by the Licensee to the Licensor within ten days from the date of execution of the access agreement.

29. The access and wholesale service rates will be charged on a cost-oriented basis, with transparency, fairness, and will be non-discriminatory to all telecommunication service Licensees. The Licensee will provide to the Licensor a copy of its charges for all Licensed services for approval within 14 days after execution of this License Agreement which will include calculation, information, and documentation as are necessary to support the pricing. The Licensee will thereafter notify and obtain approval from the Licensor whenever it proposes any changes in the existing tariffs or introduces any new tariff plan.

IV. Singapore

30. In Singapore, licensing approach differentiates licensees based on the nature of their operations, that is, Facilities-Based Operators (FBO) or Services-Based Operators (SBOs).

31. *Facilities-Based Operators (FBO)*[7]*:* FBOs can deploy any form of telecommunication network, systems, and facilities to offer telecommunication switching and/or telecommunication services to other licensed telecommunication operators, business, and/or consumers, that is, FBOs are also licensed to provide services. License is granted for 15 years and allowed to offer services that SBO can offer. Entity require only a single license for all the networks/services it intends to operate/offer. The Authority (IMDA) does not pre-determine the number of FBO licenses to be issued but spectrum or other resource constraints may limit the number of licenses available for certain networks and/or services. Currently, there are more than 70 FBOs licensees.

32. *Service-Based Operators (SBO)*[8]*:* SBOs lease telecommunication network elements from FBO to provide telecommunication services, or to resell telecommunication services of FBOs to third parties. Entities providing SBO operations and services, depending on the scope of the operations and nature of the services, are individually or classed licensed by the Authority. SBO (Individual) license is required for the stipulated types of operations and services; and SBO (Class) license category is only required to register before providing the stipulated types of services. Operators who lease international transmission capacity for the provision of their services will be licensed individually. Currently, there are 250 SBO (Individual) licensees and 900 SBO (Class) licensees.

33. In order to ensure that SBOs do not face any difficulty in getting access facilities from FBOs, the Licensee comply with the Authority's framework for facilities sharing and deployment, including all relevant codes of practice, directions and notifications which the Authority may

[7] https://www.imda.gov.sg/regulations-and-licensing-listing/facilities-based-operations--fbo--licence
[8] https://www.imda.gov.sg/regulations-and-licensing-listing/services-based-operations--sbo--licence

issue from time to time. Under the Telecoms Competition Code[9], the IMDA requires Dominant Licensees (usually FBO licensees) to provide interconnection and access-related services to facilities-based and service-based licensees, under their Reference Interconnection Offers.

34. The 'Framework for the Wholesale of Mobile Services (Wholesale Framework)'[10] which came into effect from 14th January 2020, inter alia provides that:

- Host Mobile Network Operators ("MNOs") and the Requesting Parties ("RPs") should negotiate in good faith, and use best efforts to complete negotiations within a reasonable period.
- Host MNOs should offer (i) SMS; (ii) voice; and (iii) data wholesale services, in any combination on an end-to-end basis, as requested by the RPs.
- Host MNOs should not impose unreasonable restrictions on: (a) The use of the wholesale inputs by the RPs; (b) The RPs' retail service offerings; and (c) The RPs' retail prices.
- Host MNOs and the RPs should agree on a pre-defined set of parameters on Service-Level Agreement and quality of service for the wholesale services, to ensure that there is no discrimination in terms of service quality between the end users of RPs and Host MNOs, unless agreed otherwise.

35. In general, a telecommunications licensee is not required to share with its competitors the use of infrastructure that it controls. Instead, each licensee is expected to build or lease the use of the infrastructure that it requires. FBO licensees are only required to share "Critical Support Infrastructure" as defined in the Telecoms Competition Code, which is determined at IMDA's discretion. IMDA can also require an FBO licensee to share the use of infrastructure with other FBO licensees, if it concludes that such sharing is in the public interest. Certain infrastructure must also be shared to include Radio distribution

[9] https://www.imda.gov.sg/-/media/Imda/Files/Regulation-Licensing-and-Consultations/Frameworks-and-Policies/Competition-Management/Telecom-Competition-Code/02-2012TCCwef2July2014.pdf
[10] https://www.imda.gov.sg/-/media/Imda/Files/Regulations-and-Licensing/Licensing/Telecommunication/Services-Based-Operations-Licence/Wholesale-Framework.pdf?la=en

systems for mobile coverage in train or road tunnels; In-building cabling; Lead-in ducts and associated manholes; Monopoles; Radio towers.

V. United Kingdom

36. In UK, a general authorization regime prevails, which makes no distinction between fixed, mobile and satellite networks and services. Broadly, there are two types of communication providers:

- Electronic Communication Networks (ECN) Providers
- Electronic Communication Services (ECS) Providers

37. No license is required to install or operate electronic communications networks or services unless the use of radio frequency spectrum is involved. Anyone using radio spectrum (such as MNOs and satellite service providers) needs a license under the Wireless Telegraphy Act (WTA) 2006, unless the government has exempted the particular use from the need for a license. A MVNO does not require a WTA license as it is a customer of an MNO and is not itself a user of radio spectrum.

38. All U.K. communications networks and service providers (including MVNOs) do need to comply with a general authorization regime (under the Communications Act 2003) for the provision of communications services. Radio frequency spectrum license is generally assigned through auction mechanism for a period of 20 years.

39. There isn't any specific regulation for MNOs to provide access facilities to MVNOs. In general, Ofcom regard the wholesale market for mobile connections to be competitive, so there isn't any competition regulation. It is up to each MNO to decide whether, and on what terms, it supplies MVNOs. The Competition & Markets Authority (CMA) is responsible to look that MVNOs do not face any difficulty in getting access facilities in reasonable and transparent terms, but for now there are no obligations in the U.K.

VI. United States of America

40. In USA entities are authorized to provide domestic telecommunications services, which is automatically granted upon registration with the FCC (and USAC), and there is no requirement to renew.

41. For utilizing the radio spectrum to provide domestic telecom service, entities must obtain a radio license for the frequencies to be used before commencing the service. Providers of licensed wireless, broadcast or satellite services are required to operate consistent with the terms of their FCC license and applicable FCC rules including that of interference. Licensees providing commercial mobile radio services are classified as telecommunications carriers. Telecommunications carriers must obtain an FCC Registration Number (FRN). Radio licenses are term-limited, and must be renewed to permit continued operation beyond the license term. FCC radio licenses and authorizations generally may not be transferred or assigned except with the prior approval of the FCC. Some state laws also require approval by the state prior to the transfer of control or assignment of state telecommunications authorizations.

42. There is no mandate for MNOs to provide access facilities to MVNOs, and FCC rules do not require facilities-based providers to offer wholesale services to other service providers for resale. MVNOs are not licensees. However, a diverse range of MVNOs purchase wholesale capacity from facilities-based providers for use as inputs to their own retail wireless services – as resellers of service offered by facilities-based service providers. Facilities-based providers' wholesale services are offered through unregulated, negotiated commercial contracts, which take a variety of forms, both in terms of price levels and the structure of the arrangements. Different types of resellers often increase the range of services offered to consumers by means including, but not limited to, targeting certain market segments, including segments not previously served by the hosting facilities-based provider (e.g., low-income consumers, or consumers with lower data-usage needs).

43. Entities seeking to provide telecommunications services between the U.S. and any foreign point must apply for, and obtain an international authorization before commencing service and there is no requirement to renew.

VII. **Malaysia**

44. The Malaysian licensing framework separates the network from service, and places emphasis on the activity rather than on the technology. The licensing regime allows a licensee to undertake activities that are market specific. This creates opportunities for expansion into the industry particularly in the area of Applications Service Providers and provides for a more effective utilization of Network Infrastructure. There are four categories of licensable activities namely, Network Facilities Providers, Network Services Providers, Applications Service Providers, and Content Applications Service Providers.

45. *Network Facilities Providers (NFP):* They are the owners of facilities such as satellite earth stations, broadband fiber optic cables, telecommunications lines and exchanges, radio-communications transmission equipment, mobile communications base stations, and broadcasting transmission towers and equipment.

46. *Network Services Providers (NSP):* They provide the basic connectivity and bandwidth to support a variety of applications. Network service enables connectivity or transport between different networks, and are typically also the owner of the network facilities.

47. *Applications Service Providers (ASP):* They provide particular functions such as voice services, data services, content-based services, electronic commerce and other transmission services. Applications services are essentially the functions or capabilities, which are delivered to end users.

48. *Content Applications Service Providers (CASP):* They are special subset of applications service providers including traditional broadcast

services, and the latest services such as online publishing and information services.

49. A licensee can hold all four licenses, depending on the type of licensable activity it wants to provide. Generally, a licensee must hold the NFP license before it is allowed to apply for spectrum. Also, acquiring spectrum requires the entity to manage connectivity. Therefore, in practice the entity holding the spectrum will hold both NFP and NSP licenses.

50. Within these four categories, two types of licenses exist namely, Individual licenses (granted for activities with a high degree of regulation, e.g., the need to grant rights of use for spectrum) and Registration. The licensees (2018) in each category are as follows:

Type of License	Individual	Class
Network Facilities Provider (NFP)	220	10
Network Service Provider (NSP)	183	10
Applications Service Provider (ASP)	Only class license	413
Content Applications Service Provider (CASP)	56	11

51. The Communications and Multimedia Act 1998 (CMA)[11] establishes an standard access obligations for facilities and services, wherein an NFP and NSP shall provide access to their network facilities or network services listed in the access list to any other NFP, NSP, ASP, or CSP, who makes a written request for access to such network facilities provider or network service provider on reasonable terms and conditions. However, the provider may refuse the request giving a valid ground for refusal, which, inter alia, includes technically infeasible, insufficient capacity. The Commission has discretion to include network facilities, network services, or other facilities or services facilitating network services or applications services in the access list, and are: (a) network facilities; (b) network services; and (c) other

11 https://www.unodc.org/res/cld/document/mys/communications_and_multimedia_act_html/Malaysia_Communications_and_Multimedia_Act_1998.pdf

facilities and/or services which facilitate the provision of network services or applications services, including content applications services. The facilities or services listed in (c) do not have to be owned or provided by the licensees. The commission maintains register of such facilities included in the Access List.

52. The access provided by one provider to another provider shall be of at least the same or more favourable technical standard and quality as the technical standard and quality provided on the first provider's network facilities or network services; and on an equitable and a non-discriminatory basis. On contravention, the person is liable for fine (up to exceeding five hundred thousand ringgit) or imprisonment (up to five years) or both.

53. The Commission Determination on the Mandatory Standard on Access only applies to the wholesale relationship between operators in relation to access to facilities and services included in the Access List. However, the Commission encourages operators to treat the Mandatory Standard on Access, where relevant, as a guideline for other wholesale access arrangements.

VIII. **Tanzania**

54. Similar to Malaysia, Tanzania also have Converged Licensing Framework (CFL) and includes the same four categories of licenses as those established in Malaysia, namely, Network Facility Licence (NFL), Network Service Licence (NSL), Application Service Licence (ASL), and Content Service Licence (CSL).

55. Operators are allowed to hold licenses for all categories but, this will depend upon whether a particular operator needs to provide services in any area among the four licenses categories and accordingly require an appropriate license. In case of NSL, it needs also to have an NFL in order to lease out excess capacity. As on 30th April 2020, there are 21 Network Facility Licensees, 12 Network Service Licensees, 87 Application Service Licensees and 228 Content Services Licensees. However, only Network Services Licensees are allowed to acquire access spectrum.

56. As per Electronic and Postal Communications (Access, Colocation and Infra-structure sharing), Regulations, 2018[12], any licensee who owns, leases or manages infrastructure is obliged to negotiate and enter into a sharing agreement, upon request for sharing of tangible or intangible communications facilities. An infrastructure provider shall be obliged to share communication facilities (active and passive) with infrastructure seekers on first-come first-served basis and, on the principles of impartiality and non-discrimination. However, the licensees shall meet the roll-out obligations contained in individual licenses irrespective of infrastructure sharing agreements.

57. This regulation, inter alia, mentions that licensees shall, except the infrastructure which allows Radio Frequency Spectrum Sharing, share passive (site / colocation and Transmission) and active (core nodes, radio access nodes, antenna and transmission equipment) infrastructure, without compromising quality of service or competition. All licensees shall, when sharing infrastructure, ensure that standard equipment and technical interfaces are used and the quality of service provided to an Infrastructure Seeker does not differ from the quality of service within the Infrastructure Provider's own infrastructure network. However, there is a provision for licensees according to which they shall have the right to reserve capacity for future use based on future network roll-out plans, which shall be approved by the Authority.

58. A request for infrastructure sharing shall be in writing and will include the type of infrastructure required for sharing or co-location; technical and physical requirements of infrastructure to be shared. An infrastructure provider shall treat each infrastructure seeker on a basis that is non-discriminatory in its provision of network facilities and no less favourable than the treatment which the infrastructure provider affords to its subsidiaries, its affiliates, or other similarly situated communications service providers. An infrastructure provider may refuse unreasonable requests for co-location or infrastructure sharing

[12] https://tcra.go.tz/en_documents/43

to its network facilities, which Infrastructure Seeker can refer to the Authority for resolution.

IX. **Kenya**

59. Kenya's licensing framework consists of three main technology-neutral licenses:

60. *Network Facilities Provider:* authorised to construct, own and operate any form of communications infrastructure (whether satellite, terrestrial, mobile or fixed) within the country. This includes mobile operators, data carrier network operators and local loop providers among others.

61. *Application Service Provider:* authorised to provide all forms of services/applications to end users using the networks of NFPs. This includes internet service providers, internet exchange points and GMPCS service providers among others.

62. *Content Service Provider:* authorised to provide all forms of contents' services such as information services and data processing services. This includes providers of the premium rate services, credit card validation, audio text services and other web based public commercial information providers.

63. Facilities licensee shall facilitate access to network facilities by negotiating access to network facilities by the facilities acquirer, at all times, in good faith; a facilities licensee shall submit a copy of a concluded access agreement to the Commission. A facilities provider shall treat each facilities acquirer on a basis that is non-discriminatory in its provision of facilities, and no less favourable than the treatment which the facilities provider affords to its subsidiaries, its affiliates, or other similarly situated facilities acquirers. However, a facilities licensee may refuse unreasonable requests for access to its network facilities. In that case, a facilities acquirer may apply to the Commission for permission to establish its own network or infrastructure in case facilities are not made available.

64. In addition, Submarine Cable Land license is required for landing submarine cable, and International systems and services license is required for the provision of international voice/data services. An operator may be issued multiple commercial licenses.