April 06, 2023

Shri Sanjeev Kumar Sharma,
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Mahanagar Doorsanchar Bhawan,
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New Delhi – 110 002.

Subject: **Tata Communications Limited's response to TRAI Consultation Paper on "Introduction of Digital Connectivity Infrastructure Provider (DCIP) Authorization under Unified License (UL)"**

Dear Sir,

This is with reference to the TRAI Consultation Paper No. 05/2023 dated 09-02-2023 on Introduction of Digital Connectivity Infrastructure Provider (DCIP) Authorization under Unified License (UL).

In this regard, please find enclosed herewith Tata Communications Limited's response to the Consultation Paper as Annexure for your kind perusal.

We request you to kindly take on record our response and consider the same while finalizing the recommendations.

Thanking You,
Yours Sincerely,

For Tata Communications Limited,

Praveen Sharma
(Authorized Signatory)

Enclosure: As mentioned above

Tata Communications Limited Response to TRAI Consultation Paper on 'Introduction of Digital Connectivity Infrastructure Provider (DCIP) Authorization under Unified License (UL)'

At the outset, we thank TRAI for providing us an opportunity to share our comments/inputs on this important consultation paper regarding introduction of Digital Connectivity Infrastructure Provider Authorisation as separate chapter under Unified license.

This consultation paper is in the backdrop of DoT decision that active infrastructure can be provided by telecom licensees and IP-I registration holders cannot be allowed to provide active infra under their IP-I registration and TRAI recommendation in this regard dated 13.03.20 was not accepted. However, in the backdrop of these recommendations, Government has decided for creation of a new category of licensee namely Telecom Infrastructure Licensee (TIL) who may be permitted to establish, maintain and work all equipment for wireline access, except the core equipment and holding of spectrum. Vide DoT's reference dated 11-08-2022 DOT has sought the recommendations of TRAI in respect of terms and conditions of TIL license. The DoT reference also suggest following broad parameters while formulating terms and conditions of TIL license:

- TIL to be lightly regulated
- TIL to be standalone license and not part of UL
- Entities to whom TIL can provide infra services
- Amount of license fee to be levied on pass through charges
- LF to be levied on TIL: token amount of Re 1
- Nominal Entry fee of Rs 10 Lakh for pan India license
- PBG of Rs 20 Lakhs

We are of the view that any new licensing regime should serve the broader objective of attracting new investments to the telecom sector by maintenance of regulatory certainty in licensing regime instead of making licensing regime more complex and is totally against the spirit of National Digital Communications Policy (NDCP) 2018 and prove to be impediment in promoting "ease of business" in telecom sector.

The current Unified License regime is a vertically integrated licensing regime having the right to provide Infrastructure services, Network services and services to the end -customer. We do not foresee any benefit of introducing another category of license for the telecom sector and on the contrary, it may increase the complexities and compliance requirements, apart from disrupting the present settled Unified license regime which came into being recently in 2013 for all Telecom Services and in 2015 for Virtual Network Providers (VNO).

In fact, UL-VNO licensee has the right to provide services only and to deploy limited type of infrastructure and is almost analogous to SDOs (Service Delivery Operator); however, the license conditions of UL-VNO Licensees are very onerous as compared to global standards of licensing terms for SDOs. Globally, the SDO layer is usually kept under light- touch regulation wherein license conditions of UL – VNO license is almost identical to UL-VNO license making it more compliance burden on UL-VNO licensee. Therefore, it is submitted that instead of making existing Unified license regime more fragmented, TRAI strongly recommend to DoT for simplification of UL-VNO regime as per the global standards.

Tata Communications strongly supports the current licensing regime of the layered approach viz IP-1, UL and UL-VNO regime which is well balanced; therefore, there is no need for any structural change in the licensing regime apart from simplification of UL-VNO regime as per global norms. We are of the view that the current licensing regime provides space for required segregation of layers, while ensuring the optimum utilization of telecom resources, and suggest that there should not be any change in the current licensing regime just to enable active infrastructure provision by IP I registration holders.

It is our view that any changes in the existing license regime should aim towards simplification of license regime in terms of

- statutory levies required to be paid by the Telecom Service Providers,
- compliance processes and various costs/fee associated with the licenses,
- right of way process and cost structure simplifications,
- identifying Telecom Infrastructure as a critical infrastructure to enable better uptime on fibers, for ensuring better Network quality as a whole.

We believe that any change in licensing framework should adhere to following core principles

- Any change in licensing framework should be fair and equitable with the perspective of the existing licensing framework/ existing licensees
- Same service, same rules: In case the scope of services being provided by various telecom licensees is same, they should be governed under the same rules.
- Any amendment in the licensing framework should preserve level playing field:
- Change in licensing framework should not cause any revenue arbitrage opportunities thereby causing a loss to Government exchequer.

At present, India is at present well positioned as it gears up for embracing the 5G technology which is attracting huge investments to this sector by creating a huge potential to propel the country to digital applications such as use of AI, VR, Robotics, Industry 4.0, Private 5G networks for Enterprises etc. There has been huge growth in OFC network as well as 35.5 lakh kilometres of optical fibre cable (OFC) have been laid across the Country as of 30-09-2022. Similarly with respect to international bandwidth, as of the end of 2022, there are 15 international subsea cables landing in 14 distinct cable landing stations in 5 cities across India, in Mumbai, Chennai, Cochin, Tuticorin and Trivandrum. The lit capacity and the activated capacity on these 17 international subsea cables were 123.87Tbps and 83.8Tbps respectively by the end of 2021[1]. In addition, a number of new submarine cables are in pipeline for rollout, including MIST, IAX, IEX, 2Africa/EMIC-1, Blue-Raman, SEA-ME-WE 6, TEAS, etc.

It is clear from above that India continues to attract investments in the telecom sector. As announced recently, the 5G rollout has been the fastest in the country. In view of above, we feel that at present there is no need to introduce Digital Infrastructure Connectivity Provider (DCIP) Authorization.

In view of the above, we are of the view that the existing licensing regime is flexible and meets the requirement of level playing field principle as well and therefore continues to be suitable to attract foreign investments as well.

[1] https://www.submarinenetworks.com/stations/asia/india

Tata Communications issue wise comments:

Q1. Comments of stakeholders are invited on the proposed DCIP Authorization under UL (attached at Annexure V). They may also offer their comments on the issues flagged in the discussions on terms and conditions and scope of the proposed authorization. Any suggestive changes may be supported with appropriate text and detailed justification.

Response:

There is no requirement to introduce another new license with sole aim of providing telecom infrastructure to telecom service providers registered under section 4 of the Indian Telegraph Act. Creation of telecom infrastructure requires huge capex investment and therefore the investment into telecom projects have a huge gestation period. Hence, it would be very difficult for any new operator with DCIP authorisation to get return on the investments on a large capital infused by it, by only offering it to telecom service providers. Thus, the financial viability of a Digital Connectivity Infrastructure Provider would be a big challenge. An investment in the network done by an operator is driven by the long-term strategy and vision of the operator. Any unpredictability or potential disruption in future owing to change in licensing regime leads to instability in the sector and drives investors away. Further, we believe that the current licensing regime continues to attract investments into the telecom sector.

Further, we are of the view that any such changes in the present licensing framework would be against the principles of regulatory certainty which is a hallmark of successful telecom regulatory practices. The current Unified License regime is a vertically integrated licensing regime having the right to provide Infrastructure services, Network services and services to the end -customer. Additionally, we do not foresee any benefit of introducing new category of license for provision of telecom infra only and on the contrary, such unbundling may increase the complexities and compliance requirements, apart from disrupting the present settled* Unified license regime which came into being recently in 2013 for all Telecom Services and in 2015 for Virtual Network Providers (VNO).

Globally, the SDO layer is usually kept under light- touch regulation wherein license conditions of UL – VNO license is almost identical to UL-VNO license making it more compliance burden on UL-VNO licensee. Therefore, it is submitted that instead of making existing Unified license regime more fragmented, TRAI strongly recommend to DoT for simplification of UL-VNO regime as per the global standards.

Tata Communications strongly supports the current licensing regime of the layered approach viz IP-1, UL and UL-VNO regime which is well balanced; therefore, there is no need for any structural change in the licensing regime apart from simplification of UL-VNO regime as per global norms. We are of the view that the current licensing regime provides space for required segregation of layers, while ensuring the optimum utilization of telecom resources, and suggest that there should not be any change in the current licensing regime as it may lead to increase the burden for existing players.

We also of the view that introduction of proposed UL-DCIP regime is likely to distort level playing field for existing telecom service providers as network layer services will be provided by new DCIP licensee and TSPs at differential license terms for example the service providers with DCIP authorisation would be offering services without payment of any license fee to the Government while TSPs would still be obligated to pay LF.

We apprehend that the proposed DCIP licensing framework would lead to innovative structuring as it may lead to reorganisation of existing telecom service providers by taking the DCIP authorisation wherein they would serve their own licensed service provider as well as others and not under TSP license. Such arrangement will impact the revenues to the Government exchequer and would cause an arbitrage opportunity to new category of licensee vis-a-vis existing telecom licensees thereby create a non-level field for the existing telecom licensees.

Lack of clarity and certainty for DCIP under UL framework: A converged license for network and service layer provides clarity, confidence and certainty to an operator making investment in the network. Hence, we strongly oppose any proposal for creating a DCIP licensing for network. We wish to submit that any step to separate a network license will be a regressive step which will introduce uncertainty in the licensing regime, increase the compliance burden and adversely impact the future investment in the networks.

Globally, there are enough precedence of stable and predictable regulatory frameworks, with many global Regulators are proactively acting to remove the previous mandated unbundling that was introduced to bring in competition at the time of one or two original incumbents. It is seen that in case of Singapore there are two types of operators – Facility based and Service based operator. A facility-based operator can provide services to end customers as well as other telecom service providers. This is akin to Unified Licensing regime. A service-based operator hires network from facility-based operator and provides services to end customers. Thus, SBO licensing regime is akin to UL – VNO regime. Thus, the licensing scheme of Singapore is similar to India only. We submit that global trends reinforce our submission that there is no requirement for a separate Digital Connectivity Infrastructure license under UL is unwarranted.

In addition to above, there are few other countries as well, which have put in place a regime of unbundled licenses, as summarized in following paragraphs. It may be noted that such regime is in place for many years in these countries. However, the growth in the key sectoral parameters in these countries like broadband penetration etc., are nowhere comparable to India, which has demonstrated unprecedented broadband subscriber growth in last four years owing to benefits of already in-place Unified License Regime. (Refer the Annexure-I for Global practices).

Simplification in the Present Unified licensing regime would be a better to attract investments: We are of the view that the simplification of the present licensing and regulatory regime to catalyse Investments and Innovation and promote Ease of Doing Business' under mission of 'Propel India' in National Digital Communications Policy 2018 ('NDCP 2018') should be pursued through regulatory reforms creating more incentives for operators to reinvest into the sector. We believe that there is an urgent need to reduce the financial and compliance burden for different layers in the already sufficiently unbundled licensing regime, which will increase the ease of doing business in the sector and boost innovation and investment in the sector.

In view of this, it is suggested that there is no need to create a new category of licensing regime under Unified license. However, in case it is still considered desirable to devise a new category of Digital connectivity infrastructure providers (DCIP) under Unified licensing regime, it is suggested that the terms and conditions of the new DCIP operator should be framed in such a manner so that there is a level playing field with respect to existing licensing regime. Accordingly, following changes are suggested to the proposed regime.

(i) DCIP license as a new authorisation under UL instead of standalone license**:** The DoT in its reference to TRAI had proposed the term "Telecom Infrastructure Licensee" for the new category of licensee. Apparently, this was suggested since it was desired that new category of license should be lightly regulated. In case the new license is made part of Unified Licensing regime, Part I of the Unified License would become applicable on the new category as well which would make the light touch regulation ineffective. However, the TRAI has contended that to have uniformity of terms and conditions and in any amendments thereof, DCIP license should not be standalone license and rather, it should fall under UL regime. Further, TRAI has suggested that in order to have light touch regulation for the new category of license, Part I should be applied selectively.

At the outset, we do not support the new licensing framework being proposed under Digital Infrastructure Provider category of Unified Licensing regime. We are of the view that the new license would distort the level playing field amongst all the licensing regimes under UL- i.e. UL, UL- VNO and UL- DCIP (proposed).

(ii) Entities / customers for DCIP authorisation under UL: It has been proposed in the consultation paper that the DCIP may provide its services only to telecom licensees licensed under section 4 of the Indian Telegraph Act. This has been suggested since the DCIPs would be paying nil license fee. In case they are allowed to provide services to end customers, then all the existing TSPs would put/ hive off their existing active infrastructure into new companies and thus avoid payment of license fee.

It is feared that even if such a condition is put that UL- DCIP can provide its services to licensed telecom service providers only, there can still be a revenue loss to the Government exchequer since the PDOs, PDOAs, LCOs, Data Centres etc. can get themselves registered under UL- DCIP authorisation since it has negligible entry fee and no license fee. This way, UL-DCIPs would be able to provide services to LCOs, data centres etc. as well. Not only this will shrink the scope of customers for the existing telecom service providers, it would also result into loss of revenue for the Government exchequer. Therefore, we believe that such a licensing regime is not required.

(iii) Licensing and regulatory framework: It has been recommended in the consultation paper that new authorisation would be lightly regulated. The rationale is that since the DCIPs would be providing their services only to licensed entities, the principal- agent relationship between the two can be used for self-regulation. The agreements between the two entities would become the levers to ensure the security conditions, QoS, interconnection, non-discrimination etc.

The compliance of security conditions such as Telecom trusted portal, MTCTE compliances is being monitored by DoT very closely as these aspects are connected with national security. Therefore, it would not be prudent and sufficient to monitor these compliances only through principal- agent relationship. Similarly, some aspects of QoS would have to be ensured at the end of Digital Connectivity Service Provider.

(iv) Scope of services: It has been suggested that the scope of DCIP license should include to establish, maintain and work both passive and active infrastructure, equipments and systems which are required for establishing wireline access network, Radio Access Network (RAN) (excluding core network and holding of spectrum), Wi-Fi systems, and

Transmission links. It is seen that the scope of DCIP correlates with the recommendations of TRAI's recommendations dated 13-03-2020 on "Enhancement of scope of infrastructure providers category- I (IP- I) registration".

Further, TRAI has sought views on Core network as the boundaries between core and non- core are blurring. The 5G core architecture relies on Service Based Architecture (SBA) framework, where the Architecture elements are defined in terms of" Network functions" rather than by "traditional" Network Entities. Some of the functionalities/ elements are shifting from core to the edge. TRAI has suggested that considering the 5G core architecture, the User Plane Function can fall under RAN, being at the edge to end users. We agree with TRAI's classification and in future also, any access network element acquiring the functionality to act as core element, should be considered outside the scope of DCIP under Unified license.

(v) Entry Fee, Eligibility and BG requirements: While TRAI has suggested an Entry fee of Rs 2 Lakh for Pan India license, it is suggested that the Entry Fee of the Unified Licensee with DCIP authorisation should be fixed at a such level so that it does not distort the level playing field. At the same time, the Entry fee should ensure the entry of serious players and should also deter the existing telecom service providers against any potential misuse resulting into losses to the Government exchequer.

Although the DCIP have been proposed with service area spanning across Pan India, TRAI has suggested an Entry fee of Rs 2 Lakh which is equivalent to the Entry Fee paid by a Category B- ISP or M2M service provider, whose service area is limited to a telecom circle/ Metro area only. As per TRAI, a lower fee for a Pan India DCIP licensee has been suggested to attract investments and smaller players. However, it is submitted that it would create a serious imbalance vis a vis existing licensing framework. Such a licensing regime will be unfair and discriminatory for the telecom sector.

In case the creation of telecom network is hived off in a separate license, there would be three separate licensees:

- Unified License with rights of creation of telecom infrastructure, network and who can provide service to all the customers including telecom service providers.
- Unified license – VNO who can resell the telecom services to end customers and some network, infra
- Unified license – DCIP who has rights of creation of telecom infrastructure, network and who can provide infra services to TSPs.

Under the proposed new licensing regime, the complete scope of Unified license would get hived off into 2 separate categories- UL- VNO and UL- DCIP. Therefore it is suggested that in order to have no worse off situation, the Entry fee/ eligibility conditions/ PBG of UL-DCIP should be at least similar to Entry Fee paid by UL- VNO for all India ,all services. This would avoid any distortion in level playing field. In case of VNO service provider, there may be no or some limited infrastructure creation. However, the UL-DCIP's business model would be to create telecom infrastructure – for telecom service providers. Therefore, the entry fee and other eligibility conditions should be much more stringent than the UL- VNO regime or, at least at same level as defined for VNO licensee under UL regime.

- Entry Fee: It is suggested that the other eligibility conditions/ payment/ BG obligations should also be similar to highest level of such fees in UL- VNO regime. It is submitted that for a category of service providers (i.e. VNOs) who can lease telecom services from the UL- service providers and the Enty Fee has been fixed as Rs 7.5 Crs for a 10 year period for the UL- VNO licensee. However, for a category of Unified licensee, who would be creating the infrastructure, which requires huge capex, the Entry Fee cannot be kept as a miniscule amount of Rs. 2 Lakh.

- Eligibility conditions (Minimum Equity and Minimum Net worth): The creation of telecom infrastructure requires huge capex. As a matter of fact, any aspiring Digital Connectivity Service Provider can only enter the field only if it possesses the sufficient financial strength to lay/ build the telecom infrastructure.

- Service area of License and period: It is suggested that only Pan India license, covering 22 telecom circles, should be offered under this category for a period of 10 years to ensure that only serious players can obtained the license. since the DCIPs will have entire country as their area of operations, hence DCIPs should be subject to higher entry fee, PBG, FBG and Application Processing Fee.

(vi) License Fee: It has been proposed in the consultation that DCIPs will not be required to pay any license fee. To have a parity across all the licensing regimes within the UL framework, it is suggested that DCIPs should also be required to pay same license fee as being paid by other category of licenses – UL and UL – VNO licensees. Therefore, the license fee for DCIPs should be fixed as 8%. This would also prevent any loss to the Government exchequer due to potential arbitrage opportunity.

(vii) Penalty Structure: TRAI has suggested that the maximum penalty for DCIP operator should be similar to ISP Category B operator i.e. Rs 20 Lakh. It is suggested that since the DCIP would be operating on a Pan India basis, the penalty should be levied as per equivalent service area i.e. the penalty being levied on Pan India ISP Category A operator i.e. Rs 1 Crore per violation for each occasion in a service area.

(viii) DCIPs can lease/ rent/ sell their infrastructure only to such entities which are licensed under Indian Telegraph Act

TRAI has proposed that DCIP should lease/ rent/ sell their Infrastructure only to such entities which are licensed under Indian Telegraph Act. This has been proposed since the existing telcos may hive off their infrastructure (active and passive) and start providing services to the end customers at Zero license fee.

We are of the view that even if the DCIP provide their services only to entities licensed under the Indian Telegraph Act, there can be evasion of license fee in case the Data Centre/ Cable operators get themselves registered as DCIP and circumvent this clause. Thus, the proposed licensing regime will be prone to misuse and would cause erosion of revenues of Government exchequer.

(ix) Scope of DCIP authorisation – para 2.2 and 2.7(b) of “Proposed light touch regulation under Unified License” (Annexure -V)

As per Para 2.2, the scope of DCIP authorisation includes to own, establish, maintain and work all such apparatus, appliance, instrument, equipment, and system which are required for establishing all wireline Access Network, Radio Access Networks (RAN), Wi-Fi systems, and Transmission links. However, it is noted that under Para 2.7.(b), The scope of the DCIP authorisation should not include provisioning of end- to- end bandwidth using transmission systems to any customer or to any eligible service providers.

The inclusion of transmission links under Para 2.2 under the scope will create unnecessary confusion as the under para 2.7 (b), it has been mentioned that provisioning of end-to-end bandwidth using transmission systems to any customer or eligible service provider is excluded from the scope. Thus, the inclusion of transmission links under the scope would be prone to misuse. Hence, the provision of transmission links should be excluded from the scope of the proposed DCIP licensee so that the scope of the DCIP licensee is in synchronisation with the exclusions mentioned under Para 2.7 b of Annexure V.

Q 2. Are there any amendments required in other parts/chapters of UL or other licenses also to make the proposed DCIP authorization chapter in UL effective? Please provide full details along with the suggested text.

Response:

No, there is no amendment required in other parts/chapters of UL or other licenses.

We would like to reiterate that the proposed change in licensing regime would not meet any purpose of the Government. Further, we are of the view that any such changes in the present licensing framework would be against the principles of regulatory certainty which is a hallmark of successful telecom regulatory practices.

The current Unified License regime is a vertically integrated licensing regime having the right to provide Infrastructure services, Network services and services to the end-customer. Additionally, we do not foresee any benefit of introducing another category of license for the telecom sector and on the contrary, it may increase the complexities and compliance requirements, apart from disrupting the present settled Unified license regime which came into being recently in 2013 for all Telecom Services and in 2015 for Virtual Network Providers (VNO).

It is our view that any changes in the existing license regime should aim towards simplification of license regime in terms of

- statutory levies required to be paid by the Telecom Service Providers,
- compliance processes and various costs/fee associated with the licenses,
- right of way process and cost structure simplifications,
- identifying Telecom Infrastructure as a critical infrastructure to enable better uptime on fibers, for ensuring better Network quality as a whole.

However, if still need is felt for DCIP licensee, following core principles should be considered:

- Any change in licensing framework should be fair and equitable with the perspective of the existing licensing framework/ existing licensees.
- Same service, same rules: In case the scope of services being provided by various telecom licensees is same, they should be governed under the same rules.
- Any amendment in the licensing framework should preserve level playing field:

- Change in licensing framework should not cause any revenue arbitrage opportunities thereby causing a loss to Government exchequer.

Q3. Are any issues/hurdles envisaged in migration of IP-I registered entities to the proposed DCIP Authorization under UL? If yes, what are these issues and what migratory guidelines should be prescribed to overcome them? Please provide full text/details.

Response:

No Comments in view of our response submitted to Q1 & Q2 above.

As stated above, we do not recommend any change in existing licensing regime of integrated UL &UL -VNO regime.

Q 4. What measures should be taken to ensure that DCIP Licensee lease/rent/sell their infrastructure to eligible service providers (i.e., DCI items, equipment, and system) on a fair, non-discriminatory, and transparent manner throughout the agreed period? Please provide full details along with the suggested text for inclusion in license authorization, if any.

and

Q 5. How to ensure that DCIPs lease/rent/sell out the DCI items, equipment, and system within the limit of their designed network/ capacity so that the service delivery is not compromised at the cost of other eligible service provider(s)? Please suggest measures along with justification and details.

Response to Q 4 & 5:

In our view charges for sharing of infrastructure between service providers, inter-se, is beyond the remit of TRAI.

TRAI has suggested in the consultation paper that Principal – Agent type of relationship agreements between DCIP as an agent and TSP as Principal can very well take care of security, QoS and other aspects of the license conditions. We are of the view that the principal agent arrangement may not be sufficient to ensure meeting of service level agreements between DCIP and licensed entities. The DCIP should be made responsible for the infrastructure being maintained and installed at its level to ensure consistent service delivery to licensed entities.

Q 6. Stakeholders may also submit their comments on other related issues, if any.

Response:

As submitted in our response to above questions, we reiterate that there is no need for further changes in the basic structure of current licensing regime of IP-1 (Infrastructure Layer), UL (Network & Services Delivery Layer) and UL-VNO (Service Delivery Layer without ownership of Network and infrastructure) as this would not only end up further fragmenting the current established and well settled licensing regime in the country, but would also increase overheads for all telecom operators in managing complexities, compliances and organizing themselves in a new licensing regime. Any further complexity through the addition of new licenses based on segregation of existing segments is step away from what has been working well for our market.

Instead, there is a need to simplify UL-VNO licensing conditions from the perspective of their scope of service and these should be accordingly amended basis the principles of light touch regulation. Some of the suggestions are as follows:

- Incentivizing NSO-VNOs for mobile services: We believe that necessary changes should be made to the existing licensing regime to incentivize mobile operators to provide competitive, fair wholesale pricing to multiple VNOs and to allow such VNOs to partner with more than one Network Service operator. Further, in our view, VNO should have the option to choose multiple NSO for mobility and fixed line services in a Licensed Service Area. Also, International Termination Charge (ITC) which NSO (Access Service Licensee) gets for international termination on the number sold by VNO (UL-VNO-AS Licensee), the ITC should be shared with the VNO in equal share as this is the new business which is generated by the efforts of the VNO through its customers. As per Telecommunication Interconnection Usage Charges Regulation, 2003 as amended from time to time the ITC charges are not considered as a cost-plus component for the NSO.

- TRAI may consider developing retail minus pricing tariff regime for provision of wholesale services by Mobile Network Operators (MNOs) to MVNOs so that MVNOs are able to effectively compete with MNOs in the retail market.
- A separate number series to be allocated for VNO/MVNOs for bringing in more competitive regime. As the NSO continue to earn from the retail minus pricing model, where VNO/MVNO can focus on getting new services for its customers to adopt everchanging user behaviours due to technology advancement cycle which is getting reduce by the day.

Further, Additional measures should be taken to reduce the cost burden of existing operators to incentivize them to invest more in Network Infrastructure deployment. Currently one of the major cost elements for Telecom Network is maintaining quality of service by not only spending in operation and maintenance costs of fiber (repairs), but also to create multiple diverse fiber paths for same traffic due to multiple unplanned fiber cuts across the country. This is primarily because Telecom Infrastructure is not yet identified as a Critical Infrastructure in India for preventing frequent fiber cuts by other agencies working on the roads. Declaring Fiber infrastructure in country as a critical infrastructure and creating a robust legal framework around speedy Right of Way permission at reasonable charges etc. would help in increasing investments in Telecom Infrastructure by Telecom Service Providers (TSPs), by utilizing the saved capital. Investments can also be further encouraged in the existing licensing regime by modernization and simplification of license regime in terms of levies required to paid by the Operators, compliance processes and costs in the licenses, right of way process and cost structure simplifications, identifying Telecom Infrastructure as a critical infrastructure to enable better uptime on fibers, thus ensuring better Network quality as a whole etc.

Annexure – I

Global Practices on Licensing framework

The study of global practices shows that most of the countries have only two separate categories of licenses for

1. Network Service Provider, who are integrated operator enabling n/w and providing services to end customers including Service delivery operators.
2. Service Delivery Operators i.e. the Service Delivery Operators are very lightly regulated.

However, separation between infrastructure layer and network layer is not prevalent.

Some 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.

Sr no	Country	Licensing arrangement	Whether license split between Infra/ network/ Service ?
1	Australia	The licensing regime primarily consist of carriers, Nominated Carrier Declaration and carriage service providers. Carriers are owners of Telecommunication "Network Unit" to supply the carriage services. To operate radio communication network, the carrier needs to have spectrum license. The telecom companies either need carrier license or Nominated Carrier Declaration to operate facilities. A carrier can also be a carriage service provider as it does not require a license, and there is no prohibition. Nominated Carrier Declaration is the declaration through which infrastructure owner (carrier) nominates a carrier to operate its facilities. The licensed carrier applies for the NCD to the ACMA, and the owner of the network unit does not require a carrier license. 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.	The regime is similar to MNO (Carrier license) and MVNO (Carriage service license). Besides, there is a provision for carrier licensee to nominate a carrier to operate its facilities.

2.	South Africa	ICASA grants individual licenses for electronic communications network services (ECNS), and electronic communications services (ECS). 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 and may include satellite systems, fixed and mobile systems, fibre-optic cables, and electricity cable systems. 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. Ref: https://www.icasa.org.za/pages/services-licencing	An ECNS licensee wholesales network capacity to ECS licensees or other ECNS licensees for resale, but it does not deal with the public. An ECNS licensee operates physical networks made of facilities such as fibre or base stations. An ECS licensee offers retail services to the public (and may also provide wholesale services for resale to third parties). An ECS licensee operates virtual networks such as VPNs and MPLS networks. Thus, there is a split between telecom network provider and service provider- but Infrastructure layer and network layer is united.
3.	Singapore	The licensing approach differentiates licensees based on the nature of their operations, that is, Facilities-Based Operators (FBO) or Services-Based Operators (SBOs). Facilities-Based Operators (FBO): 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. Service Based Operators (SBO): SBOs lease network elements from FBO to provide telecommunication services or to resell telecom service of FBO to third parties.	The licensing is split into 2 categories – Network service providers/ MNO s i.e. FBOs and Mobile virtual network operators i.e. SBOs. No separation of Infrastructure layer from network layer is there in terms of licensing

4.	UK	In UK, no distinction is made between fixed, mobile and satellite network and services. A system of General Authorisation is followed. There are 2 type of service providers: 1. Electronic Communication Networks (ECN) providers 2. Electronic Communication Services (ECS) providers	No license is required to operate or install telecom services unless the use of spectrum is involved. Anyone using radio spectrum (MNO/ satellite service providers) needs a license under Wireless Telegraphy Act (WTA), 2006.
5.	USA	Entities are authorised to provide domestic telecom services upon registration with FCC and USAC. 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.** 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. In USA, the FCC is gradually removing the previously mandated unbundling regulations, starting with their 2004 decision to relieve incumbent local telephone companies from unbundling requirements for fibre-to-the-curb (FTTC) loops. Even, as recent as 2019, FCC was working on modernizing unbundling requirements in era of Next Generation Networks and Services (Source:https://docs.fcc.gov/public/attachments/FCC-19-119A1.pdf)	There is no separate licensing layer with respect to telecom infrastructure providers.
6.	Malaysia	There are four categories of licensable activities namely, Network Facilities Providers, Network Services Providers, Applications Service Providers, and Content Applications Service Providers. Network Facilities Providers (NFP): They are the owners of facilities such as satellite earth stations, broadband fibre optic cables, telecommunications lines and exchanges, radio-communications	There appears to be delayering of infrastructure layer and network layer in case of licensing regime followed by Malaysia. However, the regime is being

		transmission equipment, mobile communications base stations, and broadcasting transmission towers and equipment. 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. 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. 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. 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.	followed since inception and it is not the case that a new regime was brought after a time gap of 25 years. Thus, there is regulatory certainty and continuity of licensing principles in case of Malaysia.