



TELECOM REGULATORY AUTHORITY OF INDIA

Recommendations

on

‘Introduction of Digital Connectivity Infrastructure Provider (DCIP) Authorization under Unified License (UL)’

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CONTENTS

| Chapters | Description | Page No. |
|------------------|---|-----------------|
| Chapter 1 | Introduction | 1 |
| Chapter 2 | Digital Connectivity Infrastructure Providers (DCIP) License | 15 |
| Chapter 3 | Summary of Recommendations | 50 |

ANNEXURES

| Annexure No. | Description | Page No. |
|---------------------|--|-----------------|
| Annexure I | Clarification Regarding the Scope of IP-I Providers (2009) | 53 |
| Annexure II | Clarification Regarding Scope of IP-I Providers (2016) | 54 |
| Annexure III | Latest amendment in the scope of IP-I registration dated 10 th November 2022 | 55 |
| Annexure IV | DoT reference for creation of a new category of license 'Telecom Infrastructure License' (TIL) | 56 |
| Annexure V | Draft Chapter – DCIP under UL | 58 |
| | List of Acronyms | 67 |

CHAPTER 1

Introduction

- 1.1 A robust Digital Connectivity Infrastructure (DCI) is the backbone of any economic system. Today financial services (like banking, capital markets, and insurance) and crucial services like e-governance, tele-medicine, entertainment, online e-commerce sit atop the underlying architecture of telecom networks and services. DCI contributes significantly to economic development both by increasing productivity and by providing amenities that enhance the quality of life. The remarkable growth in data traffic is expected to boost development of telecom infrastructure globally. Many businesses are shifting their core businesses to cloud and hybrid digital platforms, which require robust networks for ease of accessing data within a network. As per Global Market Insights, a global market research and management consulting company, Telecom Network Infrastructure Market size surpassed USD 95 billion in 2022 and is projected to exhibit a CAGR of 6% between 2020 and 2032.¹ The growth drivers are mainly commercialization of 5G network, adoption of Software defined Network (SDN) infrastructure, rising smartphone penetration, increasing demand for data centres, and growing demand for private LTE networks, etc.
- 1.2 The convergence of digital and physical products through Machine to Machine (M2M) communication and Internet of Things (IoT) services and applications is paving the way for Fourth Industrial Revolution (Industry 4.0). It represents a transition to a new set of systems that brings together digital, biological, and physical technologies in new and powerful combinations. DCI has become the bedrock for achieving the vision of Digital India. DCI can also play a big role in the success of Industry 4.0 and the 'Make in India' initiative. For successful implementation of various Government schemes under Digital India,

¹<https://www.gminsights.com/industry-analysis/telecom-network-infrastructure-market>

Make in India, Ayushman Bharat Digital Mission (ABDM), and development of Smart Cities in India, DCI will play a vital role.

- 1.3 The recently launched 5G will transform India into a broadband superhighway and improve the country's socio-economic structure. 5G is expected to lead to increased data traffic, which in turn will lead to upgradation of existing networks and further development of advanced infrastructure with enhanced technologies. With the launch of commercial 5G services in the country, there is a paradigm shift from network expansion to network densification. 5G requires massive addition of above and below ground infrastructure, both in passive and active categories. These range from backhaul radios, antennas, towers, street furniture, and ducts etc. To deliver the dense coverage and high-capacity network required by 5G, there will be requirement to create common sharable digital infrastructure – particularly in densely populated urban areas.
- 1.4 For any Government service delivery, dependence on digital infrastructure platforms and applications is going to increase over time. Soon, there will hardly be any sector in which service delivery to the citizens will not be undertaken through digital media. Hence, it is imperative to ensure an omnipresent digital infrastructure over which, services can be delivered to achieve the socio-economic goals. Accordingly, there is need to accelerate the creation of digital infrastructure and connectivity in the country.
- 1.5 Even the Economic survey² 2022-23 has emphasized the importance of digital infrastructure in economic growth whereby it is mentioned *“While the role of traditional infrastructure has been well recognised, in recent years, the role of digital infrastructure in socio-economic development of the country has assumed an increased importance. This was especially true during the Covid-19 period when the curtailment of physical interactions necessitated the utilisation of digital infrastructure*

² Economic Survey 2022-23/Ministry of Finance/January 2023

already available for service delivery and remote work. In the coming years, the availability and spread of digital infrastructure will contribute significantly to economic growth.”

A. Emphasis on DCI in National Digital Communications Policy – 2018

- 1.6 A lot of emphasis is laid on digital infrastructure in the NDCP-2018 stating that *“Digital infrastructure and services are increasingly emerging as key enablers and critical determinants of a country’s growth and well-being”*. Under ‘Connect India’ mission, NDCP advocates *Creating Robust Digital Communications Infrastructure -To promote Broadband for All as a tool for socio-economic development, while ensuring service quality and environmental sustainability.*
- 1.7 NDCP- 2018 emphasizes investments in telecom infrastructure for facilitating development of Open Access Next Generation Networks, increased access to fixed line broadband, and fiberization of mobile networks. NDCP 2018 under the ‘Propel India’ mission also states 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”*.

B. Emphasis on DCI in other countries

- 1.8 Globally, countries are establishing best practices for formulating regulations and administrative processes in context of digital connectivity infrastructure development. The aim is to ensure that all public authorities are aligned with the goal of DCI development and ensure friction-free achievement for the same.
- 1.9 In European Commission a broadband network has been divided into three layers: passive infrastructure, active equipment technology and

delivery of services. The three layers depend on each other, meaning that layer 2 can only be realized upon completion of layer 1, and layer 3 requires the network from layer 2.

1.10 Similarly, Singapore has opted for structural and ownership separation between retail service providers (e.g., Singtel), wholesale network service provider (OpCo) and passive infrastructure provider (AssetCo) and fibre network company (NetCo) to ensure non-discriminatory access to essential passive infrastructure facilities. In Singapore, Infocomm Media Development Authority (IMDA)'s licensing system basically comprises of two types of licences: -

(i) Facilities-based operator (FBO) - deploys infrastructure and operate telecommunication network infrastructure

(ii) Service-based operator (SBO)- provides services over an infrastructure of FBO

1.11 ACMA (Australian Communications and Media Authority) distinguishes between the carriers and carriage service providers. Carriers or carrier providers are the owners of Telecommunications 'Network Unit' and provide the basic telecom 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 provide telecommunications' services to the public.

1.12 The Malaysian Communications and Multimedia Commission has licensing framework that separates the network from the 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:

- i) **Network Facilities Providers**- the fundamental building block of the convergence model upon which network, applications and content services are provided.
- ii) **Network Services Providers** - basic connectivity and bandwidth provider.
- iii) **Applications Service Providers** - voice services, data services, content-based services, electronic commerce, and other transmission services providers.
- iv) **Content Applications Service Providers** -subset of applications service providers including traditional broadcast services and the latest services such as online publishing and information services.

1.13 In UK, 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. However, a general authorization is required for two types of communication providers:

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

All UK 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.

1.14 Kenya's licensing regime is a unified and technology-neutral licensing framework that permits any form of communications infrastructure to be used to provide any type of communications service. Kenya's current Unified Licensing Framework (ULF) consists of three main technology-neutral licenses: (i) Network Facilities Provider, (ii) Application Service Provider, and (iii) Content Service Provider.

1.15 Thus, the study of international licensing and regulatory framework reveals that various countries have aligned their telecom regulations to attract investment and strengthen the service delivery segment by segregating the infrastructure/network layer and service/application layers. The advantage of such frameworks is that they simplify the licensing process and provide a more conducive environment for market growth and improvement of the socio-economic welfare of society while considering the convergence of technologies. Such frameworks result in provision of new and innovative services, reduction of prices and increase of efficiency in the provision of services and increasing the variety of offerings for subscribers.

C. Infrastructure players in existing Licensing framework in India

1.16 Over the past two decades, the Indian telecommunications sector has undergone a revolutionary transformation with significant reforms in licensing policies to reflect technological advancements and changing market demands. In the year 2013, Telecom licensing in India underwent a major transformation with the Implementation of the “Unified License (UL)” regime with vision of *One Nation - One License across services and service areas*, in which there are separate licenses for different telecommunication services. In this regime, telecom players can offer all telecommunication services under one license. Service authorization for different telecom services is done separately under UL. The guidelines³ for grant of UL were issued on 19th August 2013 and modified guidelines⁴ (comprehensive) were issued on 8th January 2014, wherein spectrum allocation has been delinked from the license and it has been mandated to obtain UL for one or more services as listed below (as per UL updated version dated on 17.01.2022):

i) Unified License (All Services)

³https://dot.gov.in/sites/default/files/UL%20guidelines%20final_2.pdf?download=1

⁴https://dot.gov.in/sites/default/files/amended%20%20UL%20guidelines_0.pdf?download=1

- ii) Access Service (Service Area-wise)
- iii) Internet Service (Category-A with All India jurisdiction)
- iv) Internet Service (Category-B with jurisdiction in a Service Area)
- v) Internet Service (Category-C with jurisdiction in a Secondary Switching Area)
- vi) National Long Distance (NLD) Service
- vii) International Long Distance (ILD) Service
- viii) Global Mobile Personal Communication by Satellite (GMPCS) Service
- ix) Public Mobile Radio Trunking Service (PMRTS) Service
- x) Very Small Aperture Terminal (VSAT) Closed User Group (CUG) Service
- xi) Audio Conferencing/Audiotex/ Voice Mail Service
- xii) Machine to Machine (M2M) Service

1.17 Unified License offers service-wise authorizations, where licensees establish networks and use them to provide services. For instance, in the case of Access Service authorization under UL, both creation of network and delivery of service are embedded in the license i.e., along with establishing and maintaining networks, such UL licensees are also providing the services to the customers. Hence, as per the licensing regime under UL, the licensees are envisaged to put passive infrastructure, active network elements and provide services using them. Thus, their role cuts across the infrastructure, network, and service layers. The licensees of UL establish the network, maintain it, provide the service to the subscribers, and manage the tariff, billing, QoS, customer care, etc.

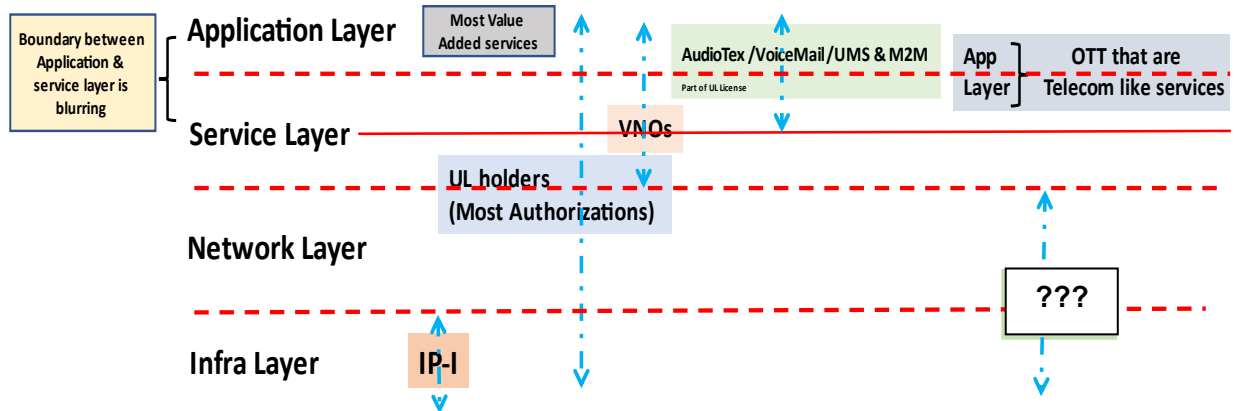
1.18 The infrastructure, network and service are not segregated under Unified License. Service only layer was introduced in India by permitting Virtual Network Operators (VNOs) in 2016. The concept of “Virtual Network Operators (VNO)” created a set of licensees who could ride on networks of others and focus on delivery of services. VNOs are treated as extension of Network Service Operators (NSOs) or TSPs and

are not allowed to install certain core network elements including equipment for interconnecting with network of other NSOs. UL (VNO) is a regime parallel to UL and offers most authorizations as available under the UL. In addition, it offers an authorization for the 'Access Services Category B' wherein the service area is a District of a State/Union Territory.

- 1.19 In addition to above, various application services and most value-added services offered today fall under the application layer. Application providers use the underlying networks and/or internet services to provide applications services. However, the boundary between the application and service layer is blurring. Some services such as Audio Conferencing/Audiotex/ Voicemail and M2M operate in a blurred boundary space between service layer and application layer and are covered under UL.
- 1.20 Currently, in India, there are players that operate purely in the infrastructure layer. They are Infrastructure Provider -I (IP-I), who are not under UL but are registered with DoT. Infrastructure Providers came into existence in the year 2000 when the Department of Telecommunications (DoT) invited applications for IP-I (Infrastructure Providers Category-I) registrations and IP-II (Infrastructure Providers Category-II) licenses. The scope of IP-I was limited to providing passive assets such as Dark Fibre, Right of Way, Duct space, and Tower on lease/ rent out/ sale basis to licensees of telecom services on mutually agreed terms and conditions. IP-II could establish digital network, provide transmission capacity, and could lease/ rent out/sell end to end bandwidth to the other Licensees of Telecom Services. From 13th August 2000 onwards, IP-II licenses were issued by DoT and IP-II were required to pay license fee. But IP-II licenses were discontinued w.e.f. 14th December 2005 and the existing IP-II licensees were asked to migrate to NLD (National Long Distance) license.
- 1.21 From the international experience discussed in the paragraphs above, Digital Communications can be broadly categorized into four major

layers consisting of (i) Application Layer (ii) Service Layer (iii) Network Layer and (iv) Infrastructure Layer. **Figure 1.1** below schematically represents how different licenses/registrations operate across various layers in Indian context.

Fig 1.1 Different Layers & Licensing framework in India



1.22 In India, the scope of work of IP-I was limited to providing passive infrastructure. DoT vide a letter dated 9th March 2009 (refer **Annexure I**) clarified that the scope of IP category-I registration has been enhanced to cover the active infrastructure, if this active infrastructure is provided on behalf of the licensees, i.e., they can create active infrastructure limited to antenna, feeder cable, Node B, Radio Access Network (RAN) and transmission system for and on behalf of UASL/CMSP licensees. However, vide its letter dated 28th November 2016 (refer **Annexure II**), DoT clarified that

“IP-I providers are not permitted to own and share active infrastructure. The IP-I providers can only install the active elements (limited to antenna, feeder cable, Node B, Radio Access Network (RAN) and transmission media only) on behalf of Telecom licensees i.e., these elements should be owned by the companies who have been issued license under Section 4 of Telegraph Act, 1885.

Keeping in view, that some IP-1 companies have invested into creation of active network infrastructure, which requires a license under Indian Telegraph Act, 1885, all IP-1 providers are hereby provided an opportunity to take either a Unified License or a Virtual Network Operator(VNO) license of requisite authorization or a UL(VNO) Cat-B license for specific geographical area within six months of issue of this letter and move all such operations involving active network elements under the license. Alternatively, within a period of six months, the IP-1 providers can transfer all such active network elements to a holder of valid license."

1.23 As per the latest guidelines⁵ of DoT for Infrastructure Providers Category-I dated 22nd December 2021, IP-I can provide assets such as Dark Fibre, Right of Way, Duct space, and Tower on lease/ rent out/ sale basis to licensees of telecom services on mutually agreed terms and conditions. In no case these companies can work and operate or provide telegraph service including end-to-end bandwidth to any service provider or any other customer. The applicant company does not require a license for operating as IP-I but is only required to register with DoT. DoT has made amendment⁶ in the scope of IP-I registration vide letter no 10-12/2012-CS-III dated 10th November 2022 (refer **Annexure -III**) wherein the following has been added: - *"IP-I registration holders shall also share the above-mentioned infrastructure with the entities as may be specified by the Central Government in the interest of national security and public interest and as per terms and conditions which may be specified by the Central Government."*

1.24 As can be seen from Figure 1.1, currently in India, no entity has been envisaged to work both in Infrastructure and network layer. If an entity has to install active elements it is forced to take unified license for service provisioning even if they don't intend to provide service. They are also subjected to lot of license compliance burdens that a Unified

⁵<https://dot.gov.in/sites/default/files/RevisedIP-1Guidelines22122021.pdf?download=1>

⁶<https://dot.gov.in/sites/default/files/Amendment%in%scope%of%IP-I%registration.pdf>

Licensee offering services is obligated to comply with. Since scope of IP-I has been restricted to only passive infrastructure layer, if an entity has to establish active infrastructure such as antenna, feeder cable, Node B, Radio Access Network (RAN) and transmission media, it has to take a unified license. Earlier IP-II category of players could do so. Given the importance of creation of active and passive infrastructure, a need was felt to have entities that can be in business of providing both active and passive infrastructure.

- 1.25 The need for such entities that can be in business of passive as well as active infrastructure creation is further felt in the wake of poor 'In-building Digital Infrastructure'. To address the issue TRAI has issued its recommendations on "Rating of Buildings or Areas for Digital Connectivity" on 20.02.2023. The emphasis of these recommendations is on providing a framework for creation of an ecosystem for DCI to be an intrinsic part of building development plan similar to other building services such as water, electricity or Fire Safety System etc. DCI is to be co-designed and co-created along with building development through collaborations among various stakeholders including Property Managers (owner or developer or builder etc.), service providers, infrastructure providers, DCI Professionals and Authorities at various urban/ local bodies. TRAI has also proposed a new chapter on 'Digital Connectivity Infrastructures in Buildings' to be included in Model Building Bye Laws (MBBL) of 2016 by modifying and updating existing provisions added in MBBL as Annexure through an Addendum to MBBL 2016 titled "Provisions for In-Building Solutions Digital Communication Infrastructure" issued by Town and Country Planning Organization (TCPO) of Ministry of Housing and Urban Affairs (MoHUA), in March 2022. It is felt that if active as well as passive DCI is to be created as intrinsic part of building development plan, this will require such players in the market that will be specialized in creation of active and passive DCI and are authorized to do so.

1.26 Keeping in view the importance of such players, TRAI had earlier in its recommendations⁷ dated 13th March 2020 on “*Enhancement of Scope of Infrastructure Providers Category-I (IP-I) Registration*” had recommended that scope of the IP-I registration should be enhanced and expanded to include passive and active infrastructure (excluding core network element and spectrum).

D. DoT’s reference for Telecom Infrastructure License (TIL)

1.27 DoT vide its letter dated 11th August 2022 (refer **Annexure-IV**) has conveyed that TRAI’s recommendations on Enhancing the Scope of IP-I Registration *cannot be accepted*. In the legal opinion sought by DoT on this issue, it has been opined that:

- a) Active Infrastructure can be provided only by Telecom Licensees.
- b) IP-I registration holders cannot be allowed to provide active infrastructure under their IP-I registration unless they are shifted to licensing regime.

1.28 Further, DoT in its letter has stated that competent authority has decided for creation of a new category license namely ‘Telecom Infrastructure License (TIL)’. Such licensees may be permitted to establish, maintain, and work all equipment for wireline access, radio access and transmission links, except the core equipment and holding of spectrum. Further, the department is of the view that IP-I registration holders (existing/new) may also be permitted to obtain Telecom Infrastructure License on voluntary basis.

1.29 DoT has sought recommendations for the terms and conditions of such license, applicable license fee, etc. under section 11(1) (a) of the TRAI Act 1997. DoT in its letter has also suggested some broad parameters for examination by TRAI while formulating these recommendations. The same has been examined and the views of the Authority on them

⁷https://www.trai.gov.in/sites/default/files/Recommendations_13032020_0.pdf

have been provided in Chapter-II as part of the discussions that precede the recommendations.

E. The present recommendations

- 1.30 IP-I have expertise and experience in rolling out telecom infrastructure in the country and have played a significant role in making affordable telecom services available in India. However, as discussed, the scope of IP-I is limited to passive infrastructure. The creation of active infrastructure is permitted to licensed TSPs only. As per license terms and conditions, active infrastructure sharing is permitted amongst the licensed telecom service provider (TSP) only, but it has its own limitation as not all TSPs may be willing to share their resources with their competitors. Presence of neutral third-party entities that can create passive as well as certain network layer active infrastructure can help in increased sharing and can bring down overall infra-development costs. In the present legal and licensing framework in India, there are no entities whose scope of work includes both passive and active digital connectivity infrastructure creation. Thus, there is need to create a new category of License that focuses on creation of both active and passive digital connectivity infrastructure.
- 1.31 As has been illustrated in **figure 1.1**, existing IP-I can continue to work at infrastructure layer 1 for provision of passive infrastructure. While the newly envisaged *Digital Connectivity Infrastructure Providers* (DCIPs) can work at both layer 1 and layer 2 and provide passive infrastructure and create active networks (excluding core elements). This is likely to result in increased common sharable DCI and network resources, reduction of cost, attract investment, strengthen the service delivery segment, and could also prove to be catalyst in proliferation of 5G services for Industry 4.0, enterprise segment and various other use cases. Further, they can spur creation of active as well as passive DCI as intrinsic part of the building development plan as has been envisaged by the Authority in its recommendations on “Rating of Buildings or Areas for Digital Connectivity” dated 20.02.2023.

- 1.32 The Authority released a consultation paper on Introduction of new Digital Connectivity Infrastructure Provider (DCIP) under Unified License on 09th February 2023. As part of the Consultations Paper, Authority had proposed a new Authorization under UL for DCIP and sought comments and counter-comments towards the same from stakeholders.
- 1.33 Written comments and counter comments on the above questions in the consultation paper were invited from stakeholders by 9th March and 23rd March 2023 respectively. On the request of the industry associations/ stakeholders, the last date for submission of written comments and counter-comments was extended up to 6th and 20th April 2023 respectively. Comments and counter-comments received from various stakeholders are available on TRAI's website.
- 1.34 In this regard, an Open House Discussion (OHD) was also conducted on 20 June 2023. Based on the written submission of the stakeholders, the discussions in the OHD, and the Authority's own analysis, the issues have been examined, and these recommendations have been framed.
- 1.35 Chapter 1 introduces the background, explains the purpose of this recommendation, and details of the existing licensing framework on infrastructure.

Chapter 2 gives out details of the submissions of stakeholders on new Authorization under UL for DCIP that was proposed as part of the Consultations Paper, the analysis and views of the Authority on the same and the recommendations thereof.

Chapter 3 summarizes all the recommendations.

CHAPTER 2

DIGITAL CONNECTIVITY INFRASTRUCTURE PROVIDER (DCIP) LICENSE

2.1 As part of the Consultations Paper, a separate light touch license authorization under Unified License was suggested to be created for DCIP and proposed chapter-XX under unified license containing detailed terms and conditions was attached as Annexure-V. In light of detailed discussion in the Consultation Paper on the need of introduction of DCIP authorization under UL, scope of work of DCIP, License fee, entry fee, application fee, PBG, penalty, etc. stakeholders were requested to submit their comments and counter-comments, if any on the following questions with justification.

Q.1 Comments of stakeholders are invited on the suggested draft DCIP Authorization under UL (attached at Annexure xx). They may also offer their comments on the issues flagged in the above discussions on terms and conditions and scope of the proposed authorization. Any suggestive changes may be supported with appropriate text and detailed justification.

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

I. COMMENTS OF THE STAKEHOLDERS ON INTRODUCTION OF DCIP AUTHORIZATION UNDER UL

2.2 Few stakeholders are of the opinion that if a new licensing regime is to be introduced for DCIP, it should be incorporated within the existing UL framework. They pointed out that M2M services and Audio Conferencing/Audiotex/Voicemail Services, which also fall under the Business-to-Business (B2B) framework, have already been included in

the UL regime. Therefore, to ensure consistency and parity, any new licensing regime for DCIP should be established within the existing UL framework.

- 2.3 In another submission, a stakeholder agreed with the proposed DCIP license, highlighting that the licensed operator can facilitate last-mile operations and cable service providers can contribute to achieving the broadband tele-density target, particularly in challenging areas in the upcoming years.
- 2.4 One of the stakeholders suggested that a standalone and light-touch license should be considered for DCIP. Infrastructure providers should not be included in the UL regime since they do not offer any telecom services and suggested that a different licensing regime should be established for DCIP to address this distinction.
- 2.5 Few stakeholders held the view that there is no need to create a new license for DCIP. One of the stakeholders has expressed concern over the risks/challenges associated with the introduction of a separate DCIP authorization:
 - a. Single point of failure: If a DCIP shuts down its business abruptly, everything will come to a standstill.
 - b. Dependency on DCIPs: TSPs will be compelled to pay the prices determined by DCIPs. As the TSPs become increasingly dependent on DCIPs with network expansion, they may have no alternative but to accept the terms and conditions imposed.
 - c. Challenges of infrastructure alignment between DCIPs and TSPs: DCIP, as a network provider, lacks interest in investing in core-level enabled products due to limited knowledge and reluctance to adopt new technologies. Network is the basis of telecom services, and a TSP's whole business cannot be made dependent on another entity.
 - d. No use of DCIP infrastructure for VNOs: DCIPs are prohibited from holding any spectrum, and since VNOs cannot establish their own infrastructure, DCIP infrastructure is rendered useless to them.

Consequently, the concept of separate DCIP Authorization becomes redundant.

- 2.6 One of the stakeholders submitted that there is no necessity for the proposed DCIP authorization since DoT is already considering the recommendation for a separate network layer licensed entity known as the Access Network Provider (ANP). The services encompassed within the proposed DCIP authorization would be a subset of the ANP's scope. Creation of active infrastructure is the implicit responsibility of the service licensees and active infrastructure sharing is already permitted. The current framework for telecommunication services already ensures adequate separation among various layers. IP-1 should not be permitted to do active infrastructure as its licensed activity. The stakeholder further submitted that if it is decided to introduce an additional DCIP authorization, adequate financial requirements should be imposed to encourage participation only from serious players. The DCIP licensees should comply with the existing license fee and security requirements outlined in the Unified License. Additionally, the stakeholder recommended implementation of measures to prevent any potential market failures.
- 2.7 Few stakeholders opined that the financial viability of a DCIP would be a big challenge as the creation of telecom infrastructure requires huge CAPEX investment and the investment into telecom projects have a huge gestation period.
- 2.8 An association of Infra providers suggested that IP-1 registration holders should also be permitted to provide active infrastructure under their registration. Any proposal to create a new category for IP-1s and subject them to a licensing regime should be strongly rejected. Such a move would hinder the progress and growth of digital infrastructure deployment and contradict the consistent support and emphasis placed on expanding the scope of IP-1s by regulatory bodies.
- 2.9 Some of stakeholders submitted that the Indian Telegraph Act does not make a distinction between passive network infrastructure and active

network infrastructure. The operations are performed by TSPs that take infrastructure on rent or lease from the infrastructure provider. The active infrastructure with IP-1 will remain passive and in non-operating condition until powered by a service provider. The elements of active infrastructure, in non-operational condition, can be provided by IP-I under registration. The scope of the IP-1 registration needs to be expanded to include active infrastructure provisioning, in addition to passive infrastructure. This submission is countered by another stakeholder stating that it is clear from the Indian Telegraph Act 1885, in terms of the definition of telegraph, that a license is required from the Government to establish, operate, and maintain the telegraph.

- 2.10 One of the stakeholders submitted that the IP-1 registration holders should be allowed to continue providing passive infrastructure or acquire a UL or UL (VNO) license to offer end-to-end bandwidth services.

ANALYSIS OF THE ISSUE AND VIEWS OF THE AUTHORITY

A) Why a new License for active and passive infra creation is required?

- 2.11 Some of the stakeholders have opined against DCIP Authorization on the ground that TRAI has already given recommendations on “*Enhancement of Scope of Infrastructure Providers Category-I (IP-I) Registration*” and ‘Enabling Unbundling of Different Layers Through Differential Licensing’ and hence, DCIP will not be required if these recommendations are implemented.
- 2.12 The Authority in its recommendations⁸ dated 13th March 2020 on “*Enhancement of Scope of Infrastructure Providers Category-I (IP-I) Registration*” and its back-reference response dated 11th January 2021 recommended that scope of the IP-I registration should be enhanced

⁸https://www.trai.gov.in/sites/default/files/Recommendations_13032020_0.pdf

and expanded to include passive and active infrastructure (excluding core network element and spectrum). DoT vide letter dated 11th August 2022 (refer **Annexure IV**) has conveyed that TRAI's recommendations on Enhancing the Scope of IP-I Registration *cannot be accepted*. In the legal opinion sought by DoT on this issue, it has been opined that:

- a) Active Infrastructure can only be provided by Telecom Licensees.
- b) IP-I registration holders cannot be allowed to provide active infrastructure under their IP-I registration unless they are shifted to licensing regime.

2.13 DoT in its letter dated 11th August 2022 (refer ANNEXURE-IV) has stated that competent authority has decided for creation of a new category license 'Telecom Infrastructure License (TIL)'. Such licensees may be permitted to establish, maintain, and work all equipment for wireline access, radio access, and transmission links, except the core equipment and holding of spectrum. The DoT is also of view that IP-I registration holders may also be permitted to obtain the new license on voluntary basis. From the above, it is clear that DoT has conveyed its decision on the TRAI's recommendations on enhancement of scope of IP-I and the same has attained finality.

2.14 NDCP-2018 envisages 'Enabling unbundling of different layers (e. g. infrastructure, network, services and applications layer) through differential licensing'. In this regard, TRAI in its recommendations on 'Enabling Unbundling of Different Layers Through Differential Licensing' dated 19th August 2021 and back-reference response dated 06th September 2022 had recommended that 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. The Access Network Provider (ANP) will have its own core network and will also be eligible to apply for and assignment of licensed spectrum. However, as per the last update of

12.10.2022 on the portal where DoT provides updates on implementation of TRAI's recommendations, DoT has mentioned that the Standing Committee has recommended not to accept these recommendations (including all sub-recommendations). To that extent DoT has already conveyed its decision on the TRAI's aforementioned recommendations and the same has also attained finality.

- 2.15 From above it is clear that the recommendations on “*Enhancement of Scope of Infrastructure Providers Category-I (IP-I) Registration*” and ‘Enabling Unbundling of Different Layers Through Differential Licensing’ **have not been accepted** by DoT. In fact, DoT has sent a fresh reference based on legal opinion for creation of a new category license ‘Telecom Infrastructure License (TIL)’. Thus, the submissions of some of the stakeholders that DCIP will not be required as above recommendations of TRAI will serve the purpose, do not hold any merit.
- 2.16 As has been discussed above, TRAI has recently issued recommendations on ‘Rating of Buildings or Areas for Digital Connectivity’ dated 20th February 2023 for improving digital connectivity in Buildings. The emphasis is on providing a framework for creation of an ecosystem for Digital Connectivity Infrastructure (DCI) to be an intrinsic part of the building development plan like other building services such as water, electricity, or Fire safety system. DCI developed in the Building by the Property Managers (Developers, Builders, etc.) should be accessible to all service providers on a fair, transparent, non-discriminatory, and non-chargeable basis. The Authority has recommended that the Property Manager should be the owner of the deployed DCI whether created by himself or through his agent and shall be responsible for maintenance, expansion, and upgradation of such DCI. The Property Manager shall allow access of DCI to all service providers in a fair, non-chargeable, transparent, and non-discriminatory manner and shall not have any exclusive arrangement or agreement with any infrastructure/service provider.

Provided that in case active wireless equipment is installed by a licensee, the licensee will be responsible for maintenance, expansion, and upgradation of such DCI and to that extent, the ownership lies with that licensee. However, this installation of active wireless equipment will be carried out on behalf of the Property Manager and Property Manager shall be responsible for ensuring that the licensee compulsorily gives access of such active wireless equipment to all service providers in a fair, transparent, non-discriminatory, and non-exclusive manner.

2.17 There is also an urgent requirement of a new infrastructure provider for the creation of passive and active DCI, as an intrinsic part, in the buildings/ complexes such as Airports, Ports, Road & Rail Transportation Hubs, Metros, Universities, Technological Parks, commercial and residential complexes, etc. Once such infrastructure is created as part of building development itself, the Service providers get the last mile connectivity ready for providing telecommunications services. It will save a huge amount of capital expenditure for Service Providers as major access network costs are associated with complex last mile connectivity. Also, it will save a lot of time and effort. The Authority is of the opinion that if active as well as passive DCI is to be created as an intrinsic part of the building development plan, this will require such players in the market that will be specialized in creation of active and passive DCI and are authorized to do so. In the present legal and licensing framework in India, there are no entities whose scope of work includes both passive and active infrastructure. The presence of neutral third-party entities that can create passive as well as active infrastructure can help in increased sharing and can bring down overall infra-development costs. This would promote efficient resource utilization of digital infrastructure, being created by independent entities, and shared amongst the licensees for providing telecommunication services. The DCIPs can bridge the void illustrated in Figure 1.1 and can work at both layer 1 and layer 2 and provide

passive and active infrastructure network layer (excluding core elements and spectrum).

2.18 One stakeholder has expressed his concerns on the financial viability of DCIP licensees and under that pretext suggested not to introduce such a license. DCI has become the bedrock for achieving the vision of Digital India and can also be expected to play a big role in the success of the 'Make in India' initiative. With the increasing digitalization, it has become even more important. The fast-growing broadband services including FTTX, 4G, and recently launched 5G, and adoption of Software Defined Network (SDN) infrastructure will increase data traffic, requiring advanced digital connectivity infrastructure with enhanced technologies. Further there would be a huge business opportunity for DCIP as an In Building Solution (IBS) provider to develop DCI in the building that will be accessible to all service providers on a fair, transparent, non-discriminatory, and non-chargeable basis. In fact, the Authority is of the view that active as well as passive DCI cannot be created as an intrinsic part of the building development plan until authorized legal entities like DCIPs that specialize in creation of active and passive DCI are introduced. In view of the above, the Authority does not find any merit in concerns raised by the stakeholder on **financial viability of DCIP**.

2.19 Some stakeholders have raised concerns that DCIP can be a single point of failure, and everything will come to a standstill if it shuts down its business abruptly. In this regard, the Authority has noted the following:

- (a) DCIPs are envisaged to provide distributed network elements and core network elements have been kept out of their scope of work. Any failure in distributed network elements can have only partial adverse effects and cannot bring everything to a standstill. Further telecom networks are distributed, mesh connected, and modern networks are intelligent and have self-healing capabilities.

Even today, distributed network elements fail, and it affects only a limited area. They do not bring the entire network to a standstill.

- (b) The work envisaged to be given to DCIPs is similar to what IP-1s are doing today except that DCIP will also be able to install active elements. In the past, even when some of the major players like RCom, Docomo, Uninor, Etisalat, Sistema Shyam etc. had shut down their businesses, everything did not come to a standstill. In any case, unified licence has provisions related to continuity of services and taking control of assets, in case required.
- (c) Most of the TSPs today have their major operations sourced through managed service contracts. Even the core elements, billing, services distribution etc. are sourced from third-party players including major OEMs. If the argument that services offered through infrastructure sourced from third parties can bring down the network to a standstill is to be bought, then that can happen even today, as the services offered by major TSPs are based on infrastructure sourced through managed service contracts from IP-1s, major OEMs and so on and so forth.
- (d) There is no clause in DCIP authorization that will expect any TSP to mandatorily hire services from DCIPs/IP-1s. They can always ensure that their critical network elements are owned and controlled by themselves.

2.20 In view of above, the concerns of stakeholder that DCIP can become a single point of failure and the likelihood of everything coming to standstill, seems farfetched to the Authority. In fact, the availability of DCI created by DCIP would reduce the CAPEX as well as OPEX load of TSPs for such infrastructure.

2.21 One of the stakeholders has opined that as the TSPs become increasingly dependent on DCIPs with network expansion, they may have no alternative but to accept the terms and conditions imposed. Extending this argument further, another TSP has opined that the TSPs will become dependent on DCIPs for the introduction of new

technology. It may be noted that the authorization of DCIP will be on a non-exclusive basis without any restriction on the number of entrants. The services to be rendered by DCIP is akin to IP-I and it is pertinent to note that IP-I played a significant role in making affordable telecom services available in India. TSP can have its own network built either on its own or with the DCI of DCIPs. The infrastructure of DCIPs will always be in addition to the infrastructure/network of TSPs. The ecosystem would be able to provide infrastructure from DCIPs, IP-I as well as from other TSPs. The presence of different entities in the market would keep the price reasonable and competitive. Thus, the Authority does not find any merit in these submissions of stakeholders.

2.22 In view of the above, the Authority recommends for creation of a new category of license that allows for creation of both active and passive digital connectivity infrastructure by an infrastructure provider.

B) Name of the new license authorization

2.23 DoT in its letter dated 11th August 2022 has stated that competent authority has decided for creation of a new category license ‘Telecom Infrastructure License (TIL)’. NDCP 2018 emphasizes a lot on Digital Infrastructure under ‘Connect India’ and ‘Propel India’ mission. Further, the term ‘DCI’ along with certain proposed entities like DCI designers, DCI engineers, DCI evaluators is being referred to by the Authority in the recent Consultation Paper and its Recommendations on ‘Rating of Buildings or Areas for Digital Connectivity’ dated 20th February 2023. The Authority has also used the term ‘DCI’ in its recommendations on ‘Use of street furniture for small cell and aerial fiber development’ dated 29th November 2021. Thus, the use of term ‘Digital Connectivity Infrastructure’ (DCI) and ‘Digital Connectivity Infrastructure Provider’ (DCIP) brings more coherence in terminologies. Therefore, instead of calling these entities as Telecom Infrastructure Licensees (TILs), the Authority would like to call them as *Digital Connectivity Infrastructure Providers* (DCIPs) as in view of the

Authority, this term better explains the work that these entities will be undertaking.

- 2.24 In view of the above, **the Authority recommends that the new category of license be called ‘Digital Connectivity Infrastructure Provider (DCIP) License’.**

C) DCIP be a standalone license or an authorization under Unified License

- 2.25 To accelerate and promote the creation of DCI in the country, it is very much required that these DCIP licensees should be lightly regulated. DoT and a few stakeholders were of the opinion that such DCIP license should be proposed as a standalone license to keep it light touch. Such an opinion can be supported by the argument that if DCIP license is made as part of an authorization under Unified Licensing (UL) regime, the onerous conditions of entire Part-I of the UL will be applicable to such licensees and thus it may not remain light touch. However, a contrary approach can be that DCIP license be made part of Unified Licensing (UL) regime and generic conditions given in Part-I of the UL can always be overridden and exempted through specific conditions that can be defined in Part-II in the respective authorization chapter. The Authority in its recommendations for suggesting a light touch license for Interconnect Exchange Providers (IXPs), has already recommended such conditions in the IXP authorization under part-II of UL license which have overriding effect on several generic conditions mentioned in Part-I.
- 2.26 In India, due to introduction of different licenses at different points of time, there are instances where similar services are being offered under different licenses. For example, Internet services can be provided under ISP License or under Unified License (ISP authorization). In such situations there is a likelihood that an amendment carried out in one license does not get reflected in other, thus violating the principle of

“*Similar services should be subject to similar rules*”. For example, the infrastructure sharing provisions mentioned in ISP licenses issued under 2002 and 2007 guidelines are at variance with those applicable for UL ISP authorization. The Authority had pointed this out to DoT through its letter dated 1st February 2022. In its recommendations on use of street furniture for small cell and aerial fiber deployment dated 29th November 2022, the Authority had approached DoT to bring clarity on the provisions of sharing of infrastructure under different licenses to remove the ambiguity in infrastructure sharing provisions.

2.27 Further, if a Radio Access Network (RAN) is being established by an ISP or access service licensee under UL, the terms & conditions that are applicable to them for establishing such RAN, should also be applicable to DCIPs if they are also being authorized to install such equipment. Similarly, if a licensee authorized under UL is subject to trusted source procurement or has to follow certain standards for installing RAN equipment, then DCIPs should also be subjected to similar conditions and, therefore, based on the aforementioned justification, there exists a strong rational in favor of making DCIP license as an Authorization under UL itself.

2.28 Some of the stakeholders have advocated that DCIP should be a separate licence and as part of their justification for the same, they have argued that all authorization under unified licence attract a licence fee of 8%. Since DCIP is envisaged with ‘*zero licence fee*’, it should not be part of UL. It may be noted that even in past, the Authority had recommended that part of activity carried out in a particular authorization should be exempted from licence fee. To accelerate the growth of fixed-line broadband services in the country, the Authority had recommended that Internet Service and Access Service licensees authorized to provide fixed-line broadband services to individual customers should be eligible for incentives in the form of License Fee (LF) exemption on the total revenue subject to meeting certain conditions. This was done keeping in view the poor penetration

of wired line services and as an incentivization for access service providers/ISPs to invest in provision of wired line broadband services. In addition, the Authority has also recommended a new authorization for Interconnect Exchange Providers (IXP) in the recent past. Even for IXP authorization under UL, the Authority had recommended zero licence fee. Therefore, the Authority does not find any merit in this submission.

2.29 Some of the stakeholders have argued that DCIP will not provide service to end customers; rather they are envisaged to provide infrastructure as service to Telecom Service Providers (TSPs) and hence they will be operating in B2B segment rather than B2C segment. In UL, the authorizations are only for such service providers which are in B2C segment. It has also been argued that any introduction of new authorization in UL will require a change in UL guidelines also. The Authority has noted that this view is countered by some other stakeholders. It is also noted that different licenses have been introduced at different points of time under UL regime such as Machine to Machine (M2M) and Audio Conferencing/Audiotex/Voicemail Services. The M2M license introduced under UL has the scope of authorization to provide connectivity and related services to M2M service providers which is in the form of Business to Business (B2B). It has also been pointed out by some stakeholders that the introduction of these authorizations did not introduce a change in UL guidelines. The Authority is of the view that if introduction of a DCIP authorization also requires some changes in UL guidelines, the same can also be done simultaneously. Thus, the Authority does not find merit in the related submission of stakeholders stating that DCIP, being a B2B segment license, cannot be part of UL.

2.30 To have uniformity of terms and conditions in the licenses and in any amendments thereof, the Authority is of the view that DCIP license should not be standalone, but part of UL regime. However, to make such an Authorization under UL to be a light touch, the terms &

conditions in part-II of UL for this Authorization should be such that they have an overriding effect on those terms & conditions of Part-I, that needs to be exempted for them.

2.31 In view of the above, **the Authority recommends that DCIP license should not be standalone license, but an authorization under Unified License.**

2.32 **To make such an Authorization under UL to be a light touch, the Authority recommends that the onerous and generic conditions (not required for DCIP) given in Part-I of the UL should be overridden and exempted through specific conditions that can be defined in Part-II in the DCIP authorization chapter.**

II. COMMENTS OF THE STAKEHOLDERS ON SCOPE OF WORK OF DCIP AUTHORIZATION UNDER UL

2.33 Some of the stakeholders have opined that 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 synchronization with the exclusions mentioned under Para 2.7b of Annexure V of the Consultation Paper. Some stakeholders have submitted that if end-to-end bandwidth provisioning is allowed to DCIPs there will be License Fee (LF) arbitrage between them and NLD players as NLD players will be required to pay 8% LF, while DCIPs will not be paying any LF.

2.34 One of the stakeholders highlighted that the boundaries between the Core and Radio Network have become blurred and are nearly non-existent in today's context. Functions that were traditionally associated with the Core Network have moved closer to the network edge through edge computing, aiming to reduce latency. This distribution of core network functions to edge components installed at various sites eliminates the distinction between the Core and Radio

network from a functional perspective. Additionally, developments like Open RAN/Cloud RAN result in the aggregation of certain Radio Access Network functionalities, making it resemble a Core Network. As a result, the Core Network and RAN have overlapped, erasing any clear differentiation between the two. Consequently, there will be no differentiation between ANP and DCIP in terms of their respective scopes for deploying infrastructure under their authorizations. The proposed new DCIP authorization will have a scope of service that is a subset of ANP. Therefore, the proposed DCIP authorization can be incorporated within the ANP authorization. One of the stakeholders was of the view that in future, if any access network element acquires the capability to function as a core element, it should be regarded as beyond the scope of DCIP under the UL.

ANALYSIS OF THE ISSUE AND VIEWS OF THE AUTHORITY

2.35 The scope of the new DCIP license authorization, that was proposed in the Consultation Paper (CP) included –

“The scope of the DCIP authorization 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 Network (RAN), Wi-Fi systems, and Transmission Links. However, it shall not include spectrum and core network elements such as Switch, MSC, HLR, IN etc. The scope of the DCIP license also includes Right of Way, Duct Space, Dark Fiber, Poles, Tower, Feeder cable, Antenna, Base Station, In-Building Solution (IBS), Distributed Antenna System (DAS), etc. within any part of India.”

Further the para 2.7 of the proposed authorization in the CP clarifies that –

“2.7 The scope of the DCIP authorization should not include:

.....

b) provisioning of end-to-end bandwidth using transmission systems to any customer or to any eligible service providers.”

2.36 It is clear from the above that the DCIPs are not envisaged to provide end-to-end bandwidth and therefore any apprehension on the arbitrage arising out of the same is ill-founded. Nevertheless, to make the provisions amply clear and dissuade any DCIP entity to provide end-to-end bandwidth, the Authority is of opinion that following clause can be included in the DCIP authorization–

“In no case, DCIP License holder would use working DCI items, equipment, and systems to provide telecommunication services (including end to end bandwidth) to any customer or for its own captive use. In case it is found that DCIP is involved in such activities, then the licensor reserves the right to cancel the license and to take over the complete control of DCI items, equipment, and system of DCIP so as to ensure continuity of service to eligible entities. This will be in addition to imposition of (a) penalty as per DCIP authorization and (b) License Fee (as applicable to NLD Licensees) on revenues generated through activities that would otherwise fall under the scope of any other UL authorization/license issued by DoT.”

2.37 However, given that the next generation Radio Access Networks (RAN) allows establishment of centralized baseband units, the Authority is of the opinion that DCIPs should be allowed to install wired transmission link (but not wireless) to connect to its own BBU (Baseband Unit)/RU (Radio unit)/Antenna.

2.38 The scope of DCIP includes Base station, RAN and DAS (Distributed Antenna System), etc. that would require the deployment of wireless telegraphy equipment. It is noted that the purchaser of such equipment needs to obtain ‘frequency authorization/ agreement in principle letter’ from WPC Wing, DoT before purchasing any equipment in the licensed bands. Subsequently a Wireless Operating License (WOL) is also required

for operating the equipment. Hence, the Authority is of view that DCIP should be allowed to obtain Wireless telegraphy Licenses from WPC wing to possess and to purchase/ import wireless equipment. Also, enabling provisions need to be made for DCIPs to purchase radio equipment without assignment of any spectrum. The Authority has therefore proposed a clause in DCIP authorization - *The DCIP Licensee should be eligible to apply for and issue of licence under the Indian Wireless Telegraphy Act, 1933 to possess such wireless telegraphy apparatus (without assignment of any spectrum) that is permitted under the scope of DCIP authorization. However, the DCIP authorization holder should not be eligible to apply for and assignment of any kind of licensed spectrum.* **In view of the aforementioned, the Authority recommends that enabling provision should be made by DoT for DCIP Licensees to purchase radio equipment without assignment of any spectrum.**

III. COMMENTS OF THE STAKEHOLDERS ON LICENSE FEE

- 2.39 Some of the stakeholders have opined that DCIP should be required to pay the same license fee as for other categories of licenses under UL and UL-VNO licenses and suggest fixing the license fee at 8%. Charging zero license fee on DCIPs while imposing 8% fees on other licensees creates an uneven playing field within the telecom industry and among inter-se licensees.
- 2.40 One of the stakeholders submitted that revenue exchanged for active infrastructure sharing between telecom operators with access authorization should be excluded from the application of License Fees. All operators coming under the UL regime should be uniformly subjected to LF to maintain a level playing field in the sector. Further, the LF levy on telecom operators should be reduced.

- 2.41 One of the stakeholders and an individual emphasized the principle of "Same service same rules," suggesting that telecom licensees providing similar services should be governed by the same regulations. They highlight the importance of maintaining a level playing field and ensuring that any amendments to the licensing framework do not create opportunities for revenue arbitrage, which could result in a loss for the government's exchequer.
- 2.42 One of the stakeholders submitted that the license fee is one of the largest non-tax contributing sources of income for the nation. Any subsidy in the form of license fee exemption will likely benefit larger operators and may be a mis-targeted subsidy. It has been proposed to allow for the exemption of 5% of the license fee (USOF levy) for revenue generated in rural and unconnected regions by the infrastructure provider (DCIP) after proper assessment. This approach would rationalize the license fee and promote infrastructure development in rural regions. The stakeholder further opined that a PPP (Public Private Partnership) approach is proposed for telecom infrastructure - A holding company, called Telecom Infrastructure and Finance Corporation (TIFC), can be established as a Special Purpose Vehicle or a public sector limited enterprise. TIFC to develop the telecom infrastructure nationwide to foster digital, social, and economic growth.
- 2.43 One of the stakeholders submitted that DCIP should provide its services only to telecom licensees. Stakeholders have submitted that the PDOs, PDOAs, LCOs, Data Centers etc. can get UL- DCIP authorization since it has negligible entry fee and no license fee and, in this way, UL-DCIPs would be able to provide services to LCOs, data centers etc. as well. Not only this will shrink the scope of customers for the existing telecom service providers, but it would also result in loss of revenue for the Government exchequer.
- 2.44 Some of the stakeholders have suggested that no license fee should be imposed on DCIP. They have argued that DCIPs do not provide services

but only rent or lease out their infrastructure to telecom licensees. Only a token amount (Re 1) should be considered which will boost investment in telecom infrastructure.

ANALYSIS OF THE ISSUE AND VIEWS OF THE AUTHORITY

- 2.45 Some of the stakeholders have submitted that there would be license fee arbitrage in favour of DCIP for the services including NLD bandwidth provided by DCIP to TSPs/ISPs/ NLD licensees as the same services is being offered by existing licensed TSPs with the L.F @ 8%. Further one of stakeholders has also submitted that Data Centers, LCOs, etc may get DCIP license and would be able to obtain services from other DCIP or use own captive DCI and services. As has already been discussed, provision of end-to-end bandwidth has already been excluded from the scope of DCIP authorization. As far as apprehensions raised by some stakeholders about Data Centres, LCOs etc taking DCIP license and getting services from other DCIP, following clause in the proposed authorization ensures that DCIPs cannot provide infrastructure to other DCIPs –

“The DCIP Licensee are authorised to provide DCI items, equipment, and systems on lease/rent/sale basis to any entity (excluding other DCIPs) having a valid license under section 4 of Telegraph Act 1885, and entities notified by the Government for this purpose.”

- 2.46 Some of the stakeholders have raised concerns that there may be a chance that some of the entities who are providing active and passive infrastructure on sharing basis under their licence authorization will take DCIP licence and will share such infrastructure under DCIP licence. As DCIP licensees will not be imposed any licence fee this would result in loss of some revenue to the Government. This will create revenue arbitrage opportunity vis-à-vis such players who will continue to provide such infrastructure under unified licence and pay 8% licence fee on the revenue so earned. They have argued that this would disturb the level-playing field between different players. The

Authority has gone into the details submitted by various stakeholders in this regard. The Authority is conscious of the fact that some of the players would try to hive off their infrastructure business into separate entities and will take DCIP licence authorization for providing infrastructure. They may be currently paying licence fee on the revenue so generated by sharing of active infrastructure and subsequent to introduction of DCIP licence the Government would be deprived of this licence fee. However, the Authority would like to point out that this is akin to what happened when IP-1 registrations were introduced in 2000. At that point of time also, several existing players hived off their infrastructure business under newly established companies and registered them as IP-1. This is well-documented that by allowing establishment of IP-1 players, telecom infrastructure and affordability of services in India got a boost. Over the years, the telecom tower industry in India has emerged as a trendsetter in infrastructure sharing. It was because of common shareable infrastructure created by IP-1 players that led to widespread growth in mobile networks and services. The amount of licence fee the Government is getting from this growth of telecom services cannot be overemphasized. Common shareable infrastructure creation also helped in reduction of network rollout costs and time involved and improved accessibility to remotest corners of the country. There is no denying of the fact that many TSPs hived off their infrastructure business into separate entities and took registration under IP-1 category. However, the common sharable infrastructure that was created by IP-1 companies acted as a catalyst in growth of telecom services. The Authority envisages that by allowing DCIPs to operate without licence fee would further boost active and passive infrastructure creation in the country in a similar way as it did when IP-Is were created. Undoubtedly there will be a loss of small license fee to the government. DCIP will only be able to provide services to other TSPs and not to end consumers. This means that (a) the amount of licence fee involved would be very less; and (b) the Government

would be able to earn licence fee from the services that the other TSPs would offer using this infrastructure. The Authority is of the opinion that the costs involved in terms of losing small amount of licence fee are far outweighed by the benefits that it would accrue to the Indian economy and the citizens. In view of the aforesaid, the Authority has no second thoughts in recommending that there should not be any licence fee applicable to DCIP authorization. Further, all TSPs are at par when it comes to hiving off their business and offering infrastructure for sharing under DCIP authorization. If they find merit in same, there is no preclusion for any TSP from doing so. To that extent, level playing exists among all TSPs. Even when the IP-I registration was introduced, some TSPs decided to hive-off their passive infrastructure business into separate entities immediately while others did not find merit in doing so at that point of time. However, a level playing field existed to the extent that all TSPs were allowed to do so, if they wanted.

2.47 The next generation services such as 5G, IoT, M2M, etc. requires huge bandwidth with high reliability and low latency. This requires densification of both wireless as well as wireline access networks. Today, it has become a critical and immediate challenge as the creation of robust DCI requires huge CAPEX investment with long gestation period. Hence, DCI creation needs to be incentivized and more players/ investment needs to be attracted. If such entities are incentivized by exempting them from payment of any license fees, this can help in speedy proliferation of DCI in the country. Those licensees that specialize in service provisioning to end customers can ride on the DCI. This can also promote efficient resource utilization as the DCI created by independent entities, can be shared amongst all types of licensees. It is noted that DCIP's scope of work, akin to IP-Is, does not involve direct service provision to end customers. Since LF is being imposed and recovered from licensees who are providing telecom services directly to end customers, the DCIPs providing underlying network infrastructure to such licensees should not be subject to LF. In view of

above, **the Authority recommends that there should not be any license fee applicable to DCIP authorization.**

IV. COMMENTS OF STAKEHOLDERS ON ENTRY FEE, APPLICATION PROCESSING FEE, PERFORMANCE BANK GUARANTEE (PBG) AND PENALTY ON DCIP AUTHORIZATION

- 2.48 One of the stakeholders opined that the service area for the DCIP Authorization is recommended at the National Level. Therefore, the entry fee, application processing fee, and penalty for them should be equivalent to ISP Category 'A' and M2M Category 'A' licenses. PBG should apply to DCIPs from the date of signing the license for the first 3 years. Post-completion of this 3-year period, the PBG should be returned to them. Some of the stakeholders 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.
- 2.49 One of the stakeholders submitted that the licensee would have a wide scope with All-India permission to install all active and passive equipment (except Core equipment and Spectrum). A reasonable entry fee (Rs.20 lakhs) may be explored to avoid non-serious players. There should not be any other requirement linked to equity, net worth, PBG or FBG.
- 2.50 Another stakeholder cited that under the proposed new licensing regime, the complete scope of UL would get hived off into 2 separate categories - UL-VNO and UL-DCIP. As the UL-DCIP's business model would be to create telecom infrastructure for a telecom service provider, the entry fee and other eligibility conditions should be much more stringent than the UL-VNO regime or at least at the same level as defined for VNO licensee under UL regime. Other eligibility

conditions/payment/BG obligations should also be similar to the highest level of such fees in the UL-VNO regime.

ANALYSIS OF THE ISSUE AND VIEWS OF THE AUTHORITY

2.51 The licensees who are authorized as ISP category B and M2M category B are subjected to Entry Fee and PBG of Rs. 2 lakhs while the ISPs and M2M players who operate at national level are subjected to entry fee of Rs. 30 lakh and PBG of Rs. 40 lakhs. The DCIP license authorization would be of national level, but there would be lot of smaller players that will take this license to provide infrastructure on local and regional level with a limited area of operation, confined to city or state. Entry of such new players in this field will help in creation of more and more DCI and therefore, it can be contended that to attract more and more investment and smaller players, the entry fee should also be kept as low as possible. The aim is to strike a balance between attracting investment and fostering competition while considering the comprehensive operational scope of DCIPs. Further, DCIP scope of work does not involve providing service directly to end customers (B2C segment) but would be of providing services to other TSPs only. In view of above, the Authority is of view that entry fee, application fee and penalty for DCIP authorization should be kept at the level that is presently prescribed for ISP Category 'B' Authorization.

2.52 Hence, **the Authority recommends that for obtaining DCIP Authorization under UL, the entry fee should be kept at Rs. 2 lakhs and application processing fee should be kept at Rs. 15,000. The penalty for violation for DCIP Authorization under UL should be kept at the level that is prescribed for ISP Category 'B' Authorization.**

2.53 As far as PBG is concerned, as per the Unified License, PBG is taken *“to cover violation of license conditions and to ensure the performance under the license agreement including compliance of instructions issued*

by the Licensor from time to time". While proposing the DCIP Authorization, the terms and conditions have been proposed in such a manner that the Authorization is kept as light touch as possible. It is envisaged that the DCIPs should be exempted from most of the onerous license conditions mentioned in Part-1 of the unified license. Therefore, there can be a view that they should not be subjected to any PBG. One of the ways for ensuring that broad principles of licensing and regulatory framework in India are upheld by DCIPs and yet they remain lightly regulated, is by way of self-regulation using the principal-agent relationship between Licensed entities and DCIPs. Accordingly, the suggested Authorization envisages that the DCIPs, for providing their infrastructure, will enter into agreement with eligible licensees. These agreements will invariably contain clauses obligating DCIPs to ensure that the hirer of their infrastructure is able to fulfil the Licensing conditions including technical, operating and security conditions, when riding on their DCI. In addition, an amendment can be made to UL that in case a UL licensee (hirer of service) obtains and utilizes DCI from DCIPs (hiree of service), their commercial arrangements should have terms and conditions obligating DCIPs to ensure that various License conditions applicable on hirer including the operating and security conditions are not breached due to use of DCI of DCIP. This way conditions regarding EMF exposure by BTS (Base Stations), confidentiality of information, and security conditions can still be ensured as part of TSPs compliance, while keeping the compliance burden for DCIPs to minimum. Thus, a self-regulating mechanism has been built in the proposed framework whereby, the licensees, who are holding PBGs with licensor, will ensure that the DCIP's infrastructure is installed and used in such a manner that the services offered by eligible licensees using this DCI are as per the license terms and conditions. In any case, the Licensor will always have the right to cancel the DCIP's license, if the need be. It may be noted that the Major TSPs are already running their networks and services by outsourcing/insourcing equipment and services from third

parties. In all such cases they ensure that such equipment and services are provided so as to honour various license conditions through stringent service level agreements (SLAs). The Authority is of the view that using the SLA based principal-agent relationship between Licensed entities and DCIPs the broad principles of licensing and regulatory framework in India can be upheld by DCIPs without subjecting them to any PBG.

- 2.54 Accordingly, **the Authority recommends that no PBG should be imposed on DCIPs. The Authority also recommends that an amendment should be made to Unified License that in case a UL licensee (hirer of service) obtains and utilizes DCI from DCIPs (hiree of service), their commercial arrangements should have stringent terms and conditions obligating DCIPs to ensure that various License conditions applicable on hirer including the operating and security conditions are not breached due to use of DCI of DCIP.**

V. ISSUE RELATED TO POWER TRANSMISSION COMPANIES

COMMENTS OF THE STAKEHOLDERS

- 2.55 One of the stakeholders has submitted that currently in IP-1 as well as proposed DCIP, offering infrastructure is limited to sell/lease and rent. It would be beneficial to permit flexible contracting structures that are market determinants. The operation of granting access rights can be in addition to lease, rent and sell as Section 17 of Electricity Act, leasing, renting, selling, or licensing is considered to be creating an encumbrance on regulated transmission assets which require prior approval of regulatory commissions schemes.

ANALYSIS OF THE ISSUE AND VIEWS OF THE AUTHORITY:

- 2.56 The Authority is sanguine of the submission that there is a need to create an enabling regulatory framework that facilitates the integration of transmission licensees' assets into the telecommunications infrastructure services sector on a large scale. There is a need to promote the aggregation of the OPGW fiber inventory owned and operated by various transmission licensees and other players, including State Transmission Utilities (STUs) and private transmission licensees. To unlock significant untapped infrastructure that has already been created by such power sector transmission and distribution companies and its gainful use, it is in the overall interest of the nation to allow transmission licensees' the option to contractually grant 'access rights' to telecom licensees to offer infrastructure (such as OPGW etc) without the creation of an encumbrance. Grant of access rights on regulated transmission assets does not amount to the creation of an encumbrance and therefore approval of the Central/ State Electricity Regulatory Commission will not be required.
- 2.57 Accordingly, **the Authority has added a clause in proposed DCIP authorization whereby DCIP licensee who is also licensed under Electricity Act should be allowed to offer such infrastructure (that are permitted under the scope of this authorization) on access rights basis. The Authority also recommends that DoT should add a similar clause in IP-I registration agreement.**

VI. MIGRATION OF IP-1 TO DCIP AUTHORIZATION

- 2.58 Once the new Authorization under UL for DCIPs is announced, some of the digital infrastructure sector players who are currently registered as IP-Is, may like to take the new license and migrate their assets under this license. In this regard, comments of stakeholders were sought on the following question: -

Q 3. 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.

COMMENTS OF THE STAKEHOLDERS:

2.59 Most stakeholders have submitted that there are no issues with the migration of IP-1s to DCIP. One stakeholder submitted that IP-1 registered entities can migrate to the UL even under the current regime, as there is no prohibition on it.

ANALYSIS OF THE ISSUE AND VIEWS OF THE AUTHORITY:

2.60 Once the new Authorization under the Unified License (UL) for DCIPs is put in place, it is expected that some players in the digital infrastructure sector, who are currently registered as IP-Is, may choose to obtain the new DCIP authorization and transfer their assets accordingly. As has been discussed earlier, it is also expected that some of the UL license holders who are offering active assets for sharing under different authorizations would also like to take DCIP authorization. They would like to offer all infrastructure services under this Authorization as it will not attract any license fees. As stakeholders have submitted that they do not see any issues in migration of migration of IP-1s to DCIP, the Authority has not made any specific recommendations in this regard.

VII. FACILITATING FAIR AND NON-DISCRIMINATORY LEASE / RENTAL / SALE OF DCIP INFRASTRUCTURE TO ELIGIBLE SERVICE PROVIDERS

2.61 The scope of work of new proposed DCIP Licensee includes, to provide DCI items, equipment, and systems on mutually agreed terms and conditions to eligible service provider on fair, reasonable and non-

discriminatory manner. DCIPs are thus envisaged to be neutral hosts that will help in infrastructure creation at network layer which will be used by other licensees for provision of services. Hence, it is pertinent to ensure that the DCIP Licensee lease/rent their infrastructure (i.e., DCI items, equipment, and system) on a fair, non-discriminatory, and transparent manner throughout the agreed time period to eligible service providers, else the overall framework envisaged for delivery of services gets affected.

- 2.62 Another vital aspect, for overall framework to work efficiently and for QoS standards to be upheld, is the fact that DCIPs do not sell more than designed overall carrying capacities. It is important that DCIP should enter into agreement for their designed DCI capacity with only such number of eligible service provider(s), that their equipment, and systems can support. Otherwise, it may affect the technical and QoS benchmark parameters for provisioning of services of some eligible service providers at the cost of others.

With regard to above, comments of stakeholders were sought on the following questions in the consultation paper:

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.

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.

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

Comments of the Stakeholders:

- 2.63 One of the stakeholders submitted that the DCIP license framework should explicitly prohibit exclusive agreements with any UL Licensee or Property Manager. This is to ensure that the infrastructure is offered in a fair and transparent manner to all UL licensees without any bias. The DCIP Licensee should be prohibited from providing any preferential treatment or arrangements to one tenant over others. One of the stakeholders has opined that it should not be mandatory for IP-1s/DCIPs to share infrastructure, as this would contradict the objective of creating additional infrastructure and building redundancies in the critical digital backbone of the nation.
- 2.64 One of the stakeholders has opined that there should be a requirement for IP-1s to offer independently created infrastructure on fair, non-discriminatory, and transparent terms. However, this requirement should not apply to contracted infrastructure created by IP-1s. In many cases, TSPs request IP-1s to create specific infrastructure that the TSPs are unable to develop themselves. Subsequently, this infrastructure is transferred to the TSP under an indefeasible Right of Use (IRU) agreement, which is a valid and legally binding contractual agreement. Under the IRU, the IP-1 is prohibited from offering the infrastructure to a competitor. Therefore, such infrastructure should be excluded from the scope of infrastructure sharing on fair, non-discriminatory, and transparent grounds. This exclusion is essential to encourage the creation of infrastructure, which is the primary objective of IP-1s/DCIPs.
- 2.65 Few stakeholders submitted that certain critical compliances of UL, such as Security Conditions, Data Privacy, Confidentiality, Technical Standard, Quality of Service norms, location of network elements, facilitating inspection, and testing of Installations, should also be

applicable to DCIP. This is to ensure a level playing field for all interest groups. By imposing QoS requirements on DCIP, it will incentivize the availability of a better network for end users.

- 2.66 To ensure that DCIPs lease, rent, or sell their DCI items, equipment, and systems within the limits of their designed network capacity and avoid compromising service delivery for other eligible service providers, one stakeholder submitted that the proposed DCIP authorization should incorporate adequate penal provisions. These provisions would serve to enforce Quality of Service (QoS) standards and prevent DCIPs from overselling their capacity. The stakeholder further emphasized that these penal provisions should be graded, with license cancellation being the ultimate penalty for repeated violations. Such measures are crucial to ensure compliance with regulatory requirements and prevent market failure resulting from the overselling practices of DCIPs.
- 2.67 One stakeholder has raised the apprehensions that the proposed DCIP licensing framework would lead to innovative structuring as it may lead to reorganization of existing telecom service providers by taking the DCIP authorization wherein they would serve their own licensed service provider as well as others and not under TSP license. Such arrangements 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 creating a non-level playing field for the existing telecom licensees.

ANALYSIS OF THE ISSUE AND VIEWS OF THE AUTHORITY:

- 2.68 The DCIP Licensee's scope of work includes providing DCI items, equipment, systems, and services to eligible service providers on mutually agreed terms and conditions, ensuring fair, reasonable, and non-discriminatory access. DCIPs are envisioned as neutral hosts responsible for infrastructure creation at infra and network layer, which will be utilized by other licensees to deliver services. It would

enable economies of scale, improve affordability, and avoid duplication of networks. At the same time, it would allow faster roll out of networks and services.

2.69 It is crucial to ensure that DCIP Licensees lease or rent their infrastructure (such as DCI items, equipment, and systems) in a fair, transparent, and non-discriminatory manner throughout the agreed time period to eligible service providers. Also, DCIP Licensee should not enter into any preferential arrangement/ agreement for providing services to one TSP as compared to others. The Authority in its recommendations on 'Use of street furniture for small cell and aerial fiber deployment' dated 29th November 2022 has already recommended that enabling provisions or suitable terms and conditions shall be introduced in all telecom licenses and IP-I registration agreement prohibiting the TSPs/IP-I providers from entering any exclusive contract or right of ways with infrastructure owners/CAAs (Controlling Administrative Authorities) or any other authority.

2.70 **The Authority reiterates its recommendations made vide recommendations on 'Use of street furniture for small cell and aerial fiber deployment' dated 29th November 2022 that “enabling provisions or suitable terms and conditions shall be introduced in all telecom licenses and IP-I registration agreement prohibiting the TSPs/IP-I providers from entering into any exclusive contract or right of way(s) with infrastructure owners/CAAs (Controlling Administrative Authorities) or any other authority”.**

2.71 For an overall framework to work efficiently and for QoS standards to be upheld, it is vital that DCIPs do not sell more than designed overall carrying capacities. Also, it is important that DCIPs should enter into agreement for their designed DCI capacity with only such number of eligible service provider(s), that their equipment and systems can support. Otherwise, it may affect the technical and QoS benchmark parameters for provisioning of services of some eligible service

providers at the cost of others. As has been discussed above, DCIP authorization is designed on a light touch-based licensing approach with a rationale 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. These agreements will invariably contain clauses obligating DCIPs to ensure that the hirer of their infrastructure is able to fulfil the Licensing conditions including technical, operating and security conditions, when riding on their DCI. In addition, Authority has also recommended to amend UL to introduce a clause that in case a UL licensee (hirer of service) obtains and utilizes DCI from DCIPs (hiree of service), their commercial arrangements should have terms and conditions obligating DCIPs to ensure that various License conditions applicable on hirer including the operating and security conditions are not breached due to use of DCI of DCIP. This way conditions regarding Quality of Service, EMF exposure by BTS (Base Stations), confidentiality of information, and security conditions can still be ensured as part of TSPs compliance, while keeping the compliance burden for DCIPs to minimum. However, the Authority wants to be sure that DCIPs do not exceed their designed overall carrying capacities and maintain efficient operations while upholding the QoS standards. Failing to do so may compromise the technical and QoS benchmark parameters for certain eligible service providers, putting them at a disadvantage as compared to others. In order to be sure that in future the operating and security conditions are not compromised, the Authority has introduced an overarching clause in the proposed DCIP whereby if required at any stage, the right of licensor/ TRAI has been reserved to impose the clauses defined under UL related to security, QoS, EMF compliance, data privacy, technical standards, etc. for compliance directly by DCIP.

2.72 Authority has noted that currently there is a practice that TSPs request IP-1s to create specific infrastructure on their behalf which is

subsequently transferred to the TSP under an Indefeasible Right of Use (IRU) agreement, which is a valid and legally binding contractual agreement. Under the IRU, the IP-1 is prohibited from offering the infrastructure to a competitor. The Authority is of the opinion that such arrangements defeat the very goal of creating common sharable digital infrastructure and should be dissuaded. Rather than benefiting the entire sector, such arrangements only tend to reap the benefits of zero license fee for one particular TSP. Such arrangements trigger other companies also to hive off their businesses into separate entity, enjoy the benefits of zero LF while serving only the parent company. This only deprives the government of the License Fee that it should have got, while the benefits of common sharable infrastructure are not passed on into the economy. The Authority is of the opinion that the shared infrastructure should be complemented with the gradual removal of anticompetitive barriers to yield the greatest impact. This would facilitate significant progress in the digital infrastructure space.

2.73 In view of above, The Authority has put a clause in the proposed DCIP authorization whereby the DCIPs have been forbidden from entering into legally binding contractual agreements conferring Indefeasible Right of Use (IRU) of its DCI to specific eligible entity(ies), which may lead to exclusion of others. The Authority recommends that a similar clause may also be introduced in IP-I registration.

VIII. OTHER COMMENTS FROM THE STAKEHOLDERS

2.74 The following measures have been suggested by one or few stakeholders that need to be taken to unlock the potential of the sector further: -

- I. The current license conditions do not permit TSPs to offset the license fees paid while procuring resources such as bandwidth from other TSPs when calculating the net license fee payable to DoT.

Without addressing this critical issue, the introduction of a separate DCIP Authorization license under the Unified License (UL) framework may face challenges. Therefore, there is an urgent need to expedite the consultation process regarding the Adjusted Gross Revenue (AGR) and to resolve the problem of multiple levies of license fees in the Business-to-Business (B2B) mode.

- II. Allowing pass-through for TSPs to include payments made to other TSPs for infrastructure sharing in the computation of AGR would bring licensing parity with IP-1s. There is a provision for UL-VNO licensees but there is no similar provision in the UL to permit the deduction of infrastructure-sharing charges paid by one TSP to another.
- III. Allowing pass-through deductions could significantly reduce LF payouts to the government, as neither the TSPs nor the DCIPs would pay LF on the revenue generated through network sharing. On the other hand, not allowing pass-through deductions could be discriminatory and impose a significant burden on TSPs, who would have to pay LF on their entire revenue, including the amount paid to DCIPs. Furthermore, if pass-through deductions are allowed for obtaining infrastructure from DCIPs, all operators would prefer infrastructure from DCIPs over other TSPs. Even TSPs with their own infrastructure would be motivated to transfer their network elements to a separate DCIP company to benefit from pass-through deductions and reduce their operational costs by paying charges to the separate DCIP company for such network usage.

ANALYSIS OF THE ISSUE AND VIEWS OF THE AUTHORITY:

- 2.75 The Authority noted that most of the above additional submission of stakeholders are related to applicability of 'Pass Through' on the charges paid by one licensed entity to another licensed entity for the arriving at AGR and the License fee. The Authority is of the view that the above noted subject is outside the purview of this consultation

process and may be reviewed through a separate consultation paper, if required.

- 2.76 **Based on the submissions of stakeholders and its own analysis on scope of the DCIP license, applicability of license fee, infrastructure leasing/renting/selling, levy of entry fee, PBG, FBG, penalty etc, the Authority recommends a separate light touch license authorization under Unified License to be created for DCIP, as per terms and conditions detailed in Annexure-V.**

CHAPTER 3

Summary of Recommendations

- 3.1 **The Authority recommends for creation of a new category of Licence that allows for creation of both active and passive digital connectivity infrastructure by an infrastructure provider.**

[Para 2.22]

- 3.2 **The Authority recommends that the new category of license be called ‘Digital Connectivity Infrastructure Provider (DCIP) License’.**

[Para 2.24]

- 3.3 **The Authority recommends that DCIP license should not be standalone license, but an authorization under Unified License.**

[Para 2.31]

- 3.4 **To make such an Authorization under UL to be a light touch, the Authority recommends that the onerous and generic conditions (not required for DCIP) given in Part-I of the UL should be overridden and exempted through specific conditions that can be defined in Part-II in the DCIP authorization chapter.**

[Para 2.32]

- 3.5 **The Authority recommends that enabling provision should be made by DoT for DCIP Licensees to purchase radio equipment without assignment of any spectrum.**

[Para 2.38]

- 3.6 **The Authority recommends that there should not be any license fee applicable to DCIP authorization.**

[Para 2.47]

3.7 **The Authority recommends that for obtaining DCIP Authorization under UL, the entry fee should be kept at Rs. 2 lakhs and application processing fee should be kept at Rs. 15,000. The penalty for violation for DCIP Authorization under UL should be kept at the level that is prescribed for ISP Category ‘B’ Authorization.**

[Para 2.52]

3.8 **The Authority recommends that no PBG should be imposed on DCIPs. The Authority also recommends that an amendment should be made to Unified License that in case a UL licensee (hirer of service) obtains and utilizes DCI from DCIPs (hired of service), their commercial arrangements should have stringent terms and conditions obligating DCIPs to ensure that various License conditions applicable on Hirer including the operating and security conditions are not breached due to use of DCI of DCIP.**

[Para 2.54]

3.9 **The Authority has added a clause in proposed DCIP authorization whereby DCIP licensee who is also licensed under Electricity Act should be allowed to offer such infrastructure (that are permitted under the scope of this authorization) on access rights basis. The Authority also recommends that DoT should add a similar clause in IP-I registration agreement.**

[Para 2.57]

3.10 **The Authority reiterates its recommendations made vide recommendations on ‘Use of street furniture for small cell and aerial fiber deployment’ dated 29th November 2022 that enabling provisions or suitable terms and conditions shall be introduced in all telecom licenses and IP-I registration agreement prohibiting the TSPs/IP-I providers from entering into any exclusive contract**

or right of way(s) with infrastructure owners/CAAs (Controlling Administrative Authorities) or any other authority.

[Para 2.70]

- 3.11 The Authority has put a clause in the proposed DCIP authorization whereby the DCIPs have been forbidden from entering into legally binding contractual agreements conferring Indefeasible Right of Use (IRU) of its DCI to specific eligible entity(ies), which may lead to exclusion of others. The Authority recommends that a similar clause may also be introduced in IP-I registration.**

[Para 2.73]

- 3.12 The Authority recommends a separate light touch license authorization under Unified License to be created for DCIP, as per terms and conditions detailed in Annexure-V.**

[Para 2.76]

Clarification Regarding the Scope of IP-I Providers (2009)

**Government of India
Ministry of Communications & IT
Department of Telecommunications
Sanchar Bhawan, 20-Ashoka Road, New Delhi-110001.
(Carrier Services Cell)**

No. 10-51/2008-Cs-III

Dated: 09-03-2009


To.

All IP-I Providers

Subject: Clarification regarding scope of IP-I providers.

It is to clarify that the scope of IP-I category providers, which is presently limited to passive infrastructure, has been enhanced to cover the active infrastructure if this active infrastructure is provided on behalf of the licensees, i.e., they can create active infrastructure limited to antenna, feeder cable, Node B, Radio Access Network(RAN) and transmission system only for/on behalf of UASL/CMSP licensees.

This issues with the approval of competent authority.


9.3.2009
(S.T.Abbas)
Director(CS-III)

Clarification Regarding Scope of IP-I Providers (2016)

No. 10-40/2007-CS-III
Government of India
Ministry of Communications
Department of Telecommunications
Sanchar Bhawan, 20, Ashoka Road, New Delhi-110001.
(Carrier Services Cell)

Dated: 28.11.2016.

To
All Infrastructure Provider Cat-I (IP-I) Service Providers

Subject: Clarification regarding scope of IP-I providers.

With reference to DOT Letter No. 10-51/2008-CS-III dated 09.03.2009, the undersigned is directed to convey the following clarification regarding scope of IP-I Providers:-

“The IP-I providers are not permitted to own and share active infrastructure. The IP-I provider can only install the active elements (limited to antenna, feeder cable, Node B, Radio Access Network (RAN) and transmission system only) on behalf of Telecom licensees i.e. these elements should be owned by the companies who have been issued license under section 4 of Telegraph Act, 1885.

Keeping in view, that some IP-I companies have invested into creation of active network infrastructure, which requires a license under Indian Telegraph Act, 1885, all IP-I providers are hereby provided an opportunity to take either a Unified License or a Virtual Network Operator(VNO) license of requisite authorization or a UL(VNO) Cat-B license for specific geographical area within six months of issue of this letter and move all such operations involving active network elements under the license. Alternatively, within a period of six months, the IP-I providers can transfer all such active network elements to a holder of valid license.”

2. This issues with the approval of Competent Authority.


(Sanjeev Kumar Sharma)
Director (CS-III)

Copy to:

- (i) Sr. DDG(TERM), DoT HQ for circulation amongst the TERM Cell Units.
- (ii) Sr. DDG(AS) / WA / DDG(DS), DoT HQ – for information please
- (iii) All Licensed Telecom Service Providers
- (iv) ADG(IT), DoT HQ- for uploading the document on DoT's website.

Latest amendment in the scope of IP-I registration

Government of India
Ministry of Communications
Department of Telecommunications
Sanchar Bhawan, Ashoka Road, New Delhi-110001
(Carrier Services Cell)

No. 10-12/2012-CS-III

Dated: 10.11.2022

To


All Infrastructure Providers – Category –I (IP-I) Registration holders.

Subject: Amendment in the scope of IP-1 Registration.

In pursuance to Condition 7.5 of the Infrastructure Providers Category–I (IP-1) Registration certificate, the Deptt. of Telecommunications, Government of India hereby amends the scope of IP-1 Registration as mentioned in the first clause of IP-I Registration certificate as under:

| Existing clause | Amended clause |
|--|--|
| This is to certify that M/s ----- with ----- registered office at ----- is registered as Infrastructure Provider Category I (IP-I) to establish and maintain the assets such as Dark Fibres, Right of Way, Duct Space and Tower for the purpose to grant on lease/rent/sale basis to the licensees of Telecom Services licensed under Section 4 of Indian Telegraph Act, 1885 on mutually agreed terms and conditions. | This is to certify that M/s ----- is registered as Infrastructure Provider Category I (IP-I) to establish and maintain the assets such as Dark Fibres, Right of Way, Duct Space and Tower for the purpose to grant on lease/rent/sale basis to the licensees of Telecom Services licensed under Section 4 of Indian Telegraph Act, 1885 on mutually agreed terms and conditions. <u>IP-1 registration holders shall also share the above mentioned infrastructure with the entities as may be specified by the Central Government in the interest of national security and public interest and as per terms and conditions which may be specified by the Central Government.</u> |

2. This amendment shall be part and parcel of all existing/ new IP-1 Registration Certificates. All others Terms & Conditions shall remain unchanged.


10/11/22
(Pradeep Kumar)

Director (CS-III)

For and on behalf of the President of India

Copy for kind information to:

1. The Director General Telecom, UIDAI Bhawan, New Delhi-110001
2. DDG(AS)/ DDG(DS)/ DDG(SAT)/ DDG(DM), DoT HQ, New Delhi

DoT reference for creation of a new category of license ‘Telecom Infrastructure License’ (TIL)

Government of India
Ministry of Communications
Department of Telecommunications
Sanchar Bhawan, 20 Ashoka Road New Delhi – 110001
(Carrier Services Wing)

No. 10-12/2012-CS-III (Pt. III)

Dated: 11.08.2022

To,

The Secretary
Telecom Regulatory Authority of India
Mahanagar Doorsanchar Bhawan (Old Minto Road)
New Delhi -110002

Subject: TRAI Recommendations on Enhancement of Scope of IP-I Registration dated 13.03.2020 and seeking recommendations on proposed TIL

- Ref: 1. TRAI Recommendations dated 13.03.2020
2. DoT letter to TRAI dated 18.11.2020
3. Clarifications issued by TRAI dated 11.01.2021

The undersigned has been directed to refer to TRAI Recommendations dated 13.03.2020 on the subject “Enhancement of Scope of Infrastructure Providers Category-I (IP-I) Registration” and subsequent communications held in this regard as mentioned above.

2. The aforesaid recommendations have been examined in the Department and legal advice from AS&LA(T) DoT was also taken on this issue who inter-alia opined that:

- “Active Infrastructure can be provided only by Telecom Licensees.
- IP-I registration holders cannot be allowed to provide active infrastructure under their IP-I registration, unless they are shifted to licensing regime.”

3. After detailed deliberations/ examination, it has been decided by DoT that the aforesaid TRAI Recommendations can’t be accepted.

4. However, the competent authority has decided for creation of a new category of license namely ‘**Telecom Infrastructure License**’ (TIL). Such licensees may be permitted to establish, maintain and work all equipment for wireline access, radio access and transmission links, except the core equipment and holding of spectrum. Further, the department is of the view that IP-I registration holders (existing/ new) may also be permitted to obtain Telecom Infrastructure License on voluntary basis.

5. TRAI is requested to give recommendations for the terms and conditions of such license, applicable license fee etc. under section 11(1)(a) of the TRAI Act 1997. Following



broad parameters are suggested for examination by TRAI while formulating these recommendations:

- a. These licensees may be lightly regulated in order to give a boost to investment in telecom infrastructure in the country.
- b. TIL may be a standalone License, since making TIL a part of UL will automatically make 'Part-I' of UL applicable to TIL also and light regulations for TIL may not be feasible.
- c. Entities to whom a TIL can lease/ rent/ sell their infrastructure (TSPs/ PDOs/ PDOAs/ Local Cable Operators/ Data Centres etc.)
- d. Amount of License Fee to be levied on pass through charges/ revenue earned while sharing of infrastructure between TSP, IP-I and proposed TIL to maintain level playing field.
- e. License fee to be levied on Telecom Infrastructure Licensees. Charging of a token amount of license fee (say Re 1/-) from TIL may be explored to boost investment in telecom infrastructure
- f. Since the TIL will be having a wide scope with All-India permission to install all active and passive equipment (except Core equipment and Spectrum), a nominal entry fee (say Rs 10 Lakh) may be explored to avoid non-serious players.
- g. Conditions regarding EMF exposure by BTS (Base Stations), Confidentiality of Information, and Security Conditions. In order to ensure compliance to these conditions a Performance Bank Guarantee (PBG) of suitable amount (say Rs 20 Lakh) may be explored.
- h. Whether TIL can take on lease/ rent infrastructure from other TILs/ TSPs/ IP-I holders for further leasing/ renting it to other entities as mentioned in para (c) above.

This is issued with the approval of Hon'ble MoC.


11/08/22

(Pradeep Kumar)
Director (CS-III)

Tel. No.: 23036348

Copy to:

1. PSO to Secretary(T)
2. PPS to Member(T)/ Member (S)/ Member(F)/ DG(Telecom)/AS(T)

Proposed Light touch authorization under Unified License (UL)

CHAPTER-XX

**DIGITAL CONNECTIVITY INFRASTRUCTURE PROVIDERS (DCIPs) under
PART-II of UL**

1. **Service Area:** The Service Area for the DIGITAL CONNECTIVITY INFRASTRUCTURE PROVIDERS (DCIPs) shall be at the National Level.

2. **Scope of the DCIP Service:** Scope of this Authorization covers the following:

2.1 The authorization of DCIP shall be on non-exclusive basis without any restriction on the number of entrants.

2.2 The scope of the DCIP authorization 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 Network (RAN), Wi-Fi systems, and Transmission Links. However, it shall not include spectrum and core network elements such as Switch, MSC, HLR, IN etc. The scope of the DCIP license also includes Right of Way, Duct Space, Dark Fiber, Poles, Tower, Feeder cable, Antenna, Base Station, In-Building Solution (IBS), Distributed Antenna System (DAS), etc. within any part of India. The scope of DCIP authorization does not include provisioning of end-to-end bandwidth using transmission systems to any customer or for its own use. However, DCIP will be allowed to install wired transmission link (but not wireless) to connect to its own BBU (Baseband Unit)/RU (Radio unit)/Antenna.

2.3 The items, equipment, and systems that a DCIP licensee is authorized to provide under its scope (as per para 2.2 above) are hereinafter referred to as “DCI items, equipment, and systems”.

2.4 The scope of DCIP authorization does not include the assignment of licensed spectrum to DCIPs. Multi-Operator Radio Access Network (MORAN) sharing would only be permitted where only RAN equipment is shared not the spectrum. The end users of each operator access the services of their respective Mobile Network Operator (MNO) with the frequencies of their respective MNO.

2.5 The DCIP Licensee are authorised to provide DCI items, equipment, and systems on lease/rent/sale basis to any entity (excluding other DCIPs) having a valid license under section 4 of Telegraph Act 1885, and entities notified by the Government for this purpose. Hereinafter such licensed entities have been referred to as “eligible entities”.

2.6 DCIP licensee who is also licensed under Electricity Act will be allowed to offer such DCI items, equipment, and systems (that are permitted under the scope of this authorization) on access right basis to eligible entities.

2.7 The DCIP Licensee should provide DCI items, equipment, and systems on mutually agreed terms and conditions to eligible entities in fair, reasonable and non-discriminatory manner. In no case DCIPs will enter into legally binding contractual agreements conferring Indefeasible Right of Use (IRU) of its DCI items, equipment, and systems to specific eligible entity(ies), which may lead to exclusion of others.

2.8 The scope of the DCIP authorization should not include:

- a) providing access to DCI items, equipment, and systems to any customer other than the eligible.

- b) use of the licensed spectrum, (assigned to an eligible service provider, for provisioning of wireless Telecommunication Services) to other eligible entities, unless both eligible entities have a spectrum sharing arrangement between them.

2.9 In no case, DCIP License holder would use working DCI items, equipment, and systems to provide telecommunication services (including end to end bandwidth) to any customer or for its own captive use. In case it is found that DCIP is involved in such activities, then the licensor reserves the right to cancel the license and to take over the complete control of DCI items, equipment, and system of DCIP so as to ensure continuity of service to eligible entities. This will be in addition to imposition of (a) penalty as per DCIP authorization and (b) License Fee (as applicable to NLD Licensees) on revenues generated through activities that would otherwise fall under the scope of any other UL authorization/license issued by DoT.

2.10 The DCIP Licensee should be eligible to apply for and issue of licence under the Indian Wireless Telegraphy Act, 1933 to possess such wireless telegraphy apparatus (without assignment of any spectrum) that is permitted under the scope of DCIP authorization. However, the DCIP authorization holder should not be eligible to apply for and assignment of any kind of licensed spectrum.

2.11 The DCIP authorization holder:

- a) should be permitted to own, establish, maintain, and work DCI items, equipment, and systems, using any technology as per the prescribed standards.
- b) should utilize type of equipment and products that meet TEC standards, wherever made mandatory by the Licensor from time to time. In the absence of mandatory TEC standards, the DCIP licensee should be permitted to utilize

only those equipment and products which meet the relevant standards set by International standardization bodies, such as, ITU, ETSI, IEEE, ISO, IEC etc., or set by International Fora, such as 3GPP, 3GPP-2, IETF, MEF, WiMAX, Wi-Fi, IPTV, IPv6, etc. as recognized by TEC and subject to modifications/adaptation, if any, as may be prescribed by TEC/Licensor from time to time.

- c) should be bounded by the terms and conditions of DCIP license as well as instructions issued by the Licensor and by such orders/directions/regulations of TRAI issued as per the provisions of the TRAI Act, 1997, as amended from time to time.

2.12 The Licensee may share all infrastructure owned, established, and operated by it under the scope of this Authorization with other Licensees under UL (excluding DCIPs) and ISPs (not in UL), subject to condition that only such infrastructure will be shared that is allowed to be established by other licensee in its own license. To that effect, the provisions of this clause will have overriding effect on Clause 33 of Part-I of the UL.

2.13 The following conditions may be followed by DCIPs: -

- (i) While providing the DCI items, equipment, and systems to other entities, they shall satisfy themselves that such entity is eligible to obtain that DCI items, equipment, and systems, else it will be treated as a violation of the terms and conditions of this authorization.
- (ii) DCIPs shall be obligated to install DCI items, equipment, and systems in such a way that the hirer of their infrastructure is able to fulfill the Licensing conditions including technical, operating, Quality of Service (QoS) and security conditions, when riding on their DCI items,

equipment, and systems; subject to such other directions as Licensor or TRAI may give from time to time.

- (iii) DCIPs shall be obligated to ensure that they enter into a formal written agreement with eligible entities before providing access to DCI items, equipment, and systems to them on lease/rent/sell basis. These agreements should invariably contain clauses obligating DCIPs to ensure that hirer of their DCI items, equipment, and systems is able to fulfill the Licensing conditions including technical, operating, QoS and security conditions, when riding on their DCI.
- (iv) On request provide to the licensor details of all network elements, its location, cable routes and capacity along with GIS mapping of its DCI items, equipment, and systems.
- (v) In security sensitive areas installation of any equipment or execution of project shall be taken up only as per Licensor's policy/guidelines.
- (vi) DCI items, equipment, and systems should not become a safety or health hazard and is not in contravention of any statute, rule, regulation, or public policy.
- (vii) DCIPs shall be obligated not to provide DCI items, equipment, and systems to those who are not authorized 'eligible entities' or whose license is revoked/suspended or not in operation.

2.14 The licensor/ TRAI reserves the right to impose the clauses defined under UL related to security, QoS, EMF compliance, data privacy, technical standards, etc. for compliance directly by DCIP, if required at any stage.

3. Financial Conditions:

- i. Entry fee: The total amount of Entry fee shall be as specified in Annexure-II.
- ii. DCIPs will not be required to pay any License Fee

iii. The DCIP Licensee would be required to submit to licensor an annual statement of Revenues earned by it through provision of its DCI items, equipment, and systems on lease/sale/rent/access right basis in a format prescribed at Annexure-A to this authorization. Neither any license fee will be imposed on the revenues detailed under this statement, nor will these revenue form part of gross revenues under any other authorization.

4. Part I of UL Conditions that will not be applicable for Licensees having only DCIP Authorization

| Chapter | Part I of UL Conditions that will not be applicable for Licensees having only DCIP Authorization |
|--|---|
| Chapter I: General Conditions | 1.5, 1.6, 1.7, 2.3, 2.4, 7, 8 |
| Chapter II: Commercial Conditions | - |
| Chapter III: Financial Conditions | 18.2, 18.3, 18.4, 19, 20, 21.2, 22 |
| Chapter IV: Technical Conditions | 24.1, 25.1, 29 |
| Chapter V: Operating Conditions | 30.1, 30.2, 30.3(b), 30.4, 30.5, 30.6, 30.7, 30.11, 31, 32.2, 34, 35, 37.2, 37.3, 37.4, 38.1, 38.2, 38.3 |
| Chapter VI: Security Conditions | 39.2, 39.10(ii), 39.11 (i), 39.11 (ii), 39.11 (iv), 39.12, 39.13, 39.15, 39.17, 39.18, 39.19, 39.20, 39.21, 39.22, 39.23(ii), 39.23(iii), 39.23(iv), 39.23(v), 39.23(viii), 39.23(ix), 39.23(x), 39.23(xvi), 39.23(xvii), 39.23(xix), 39.23(xx) |
| Chapter VII: Spectrum Allotment and use | 41, 42 |

ANNEXURE-A

Format of Statement of Revenue

_____ (Name and address of operator)

DCIP License No.....

Statement of Revenue# for the financial year.....

(AMOUNT IN RUPEES)

| | PARTICULARS | For financial year _____ |
|-----------|--|------------------------------------|
| 1. | Revenues earned by DCIP authorization holder through provision of its DCI items, equipment, and systems on lease/sale/rent/access right basis | |
| (a) | Right of way | |
| (b) | Duct Space | |
| (c) | Dark Fiber | |
| (d) | Poles | |
| (e) | Tower, | |
| (f) | Base station, Antenna, Feeder Cables | |
| (g) | In-Building Solutions | |
| (h) | Wi-Fi system | |
| (i) | Transmission equipment | |
| (j) | Any other DCI items, equipment, and systems (PL provide full details of such DCI items, equipment, and systems) | |
| | Total | |

All Revenues earned by DCIP authorization holder through provision of its DCI items, equipment, and systems on lease/sale/rent/access right basis under the scope of DCIP authorization will be exempted from payment of any License Fee. Such revenues will also not be included for Gross Revenue calculations under any other Authorization held under Unified license by the DCIP licensee.

Suggested Amendments to Annexure-II of UL

Details of Minimum Equity, Minimum Networth, Entry Fee, PBG, FBG and Application Processing Fee for various service authorizations

| Sl No. | Service | Minimum Equity (Rs. Cr.) | Minimum Networth (Rs. Cr.) | Entry Fee (Rs. Cr.) | PBG (Rs. Cr.) | FBG (Rs. Cr.) | Application Processing Fee (Rs. Cr.) |
|---|---|--------------------------|----------------------------|--------------------------|---------------|---------------|--------------------------------------|
| 1 | UL (All services) | 25.000 | 25.000 | 15.000 | 44.000 | 8.800 | 0.010 |
| Service Authorization wise requirements | | | | | | | |
| 1 | Access Service (Telecom Circle / Metro Area) | 2.500 | 2.500 | 1.000 (0.5 for NE & J&K) | 2.000 | 0.400 | 0.005 |
| 2 | NLD (National Area) | 2.500 | 2.500 | 2.500 | 0.500 | 1.000 | 0.005 |
| 3 | ILD (National Area) | 2.500 | 2.500 | 2.500 | 0.500 | 1.000 | 0.005 |
| 4 | VSAT (National Area) | Nil | Nil | 0.300 | 0.100 | 0.060 | 0.005 |
| 5 | PMRTS (Telecom circle/Metro) | Nil | Nil | 0.005 | 0.002 | 0.002 | 0.0015 |
| 6 | GMPCS (National Area) | 2.500 | 2.500 | 1.000 | 0.500 | 0.200 | 0.005 |
| 7 | ISP "A" (National Area) | Nil | Nil | 0.300 | 0.400 | 0.020 | 0.005 |
| 8 | ISP "B" (Telecom circle/Metro Area) | Nil | Nil | 0.020 | 0.020 | 0.002 | 0.0015 |
| 9 | ISP "C" (SSA) | Nil | Nil | 0.002 | 0.001 | 0.0002 | 0.001 |
| 10 | Audio Conferencing/ Audiotex/ Voice mail service | Nil | Nil | 0.100 | 0.02 | 0.002 | 0.0015 |
| 11 | Machine to Machine 'A' (National Area) | Nil | Nil | 0.30 | 0.400 | 0.020 | 0.005 |
| 12 | Machine to Machine 'B' (Telecom circle/ Metro Area) | Nil | Nil | 0.020 | 0.020 | 0.002 | 0.0015 |
| 13 | Machine to Machine 'C' (SSA) | Nil | Nil | 0.002 | 0.001 | 0.0002 | 0.001 |
| 14 | DCIP | Nil | Nil | 0.020 | NIL | NIL | 0.0015 |

Suggested Amendments to Annexure-VI of UL

Details of Maximum amount of Penalty under each Service Authorization

| S. No. | Service Authorization | Maximum Amount of Penalty per violation for each occasion in Service Area |
|-----------|---|---|
| 1 | Access | 50 Crore |
| 2 | NLD | 50 Crore |
| 3 | ILD | 50 Crore |
| 4 | ISP Cat A | 1 Crore |
| 5 | ISP Cat B | 20 Lakh |
| 6 | ISP Cat C | 10 Lakh |
| 7 | GMPCS | 50 Crore |
| 8 | PMRTS | 10 Lakh |
| 9 | VSAT CUG | 1 Crore |
| 10 | Audio Conferencing/ Audiotex/ Voice mail services | 20 Lakh |
| 11 | M2M Cat A | 1 Crore |
| 12 | M2M Cat B | 20 Lakh |
| 13 | M2M Cat C | 10 Lakh |
| 14 | DCIP | 20 Lakh |

LIST OF ACRONYMS

| Sl. No. | Acronym | Description |
|----------------|----------------|---|
| 1. | 3GPP | Third Generation Partnership Project |
| 2. | 5G | Fifth Generation Technology |
| 3. | 4G | Fourth Generation Technology |
| 4. | ACMA | Australian Communications and Media Authority |
| 5. | ABDM | Ayushman Bharat Digital Mission |
| 6. | AGR | Adjusted Gross Revenue |
| 7. | ANP | Access Network Provider |
| 8. | B2B | Business to Business |
| 9. | B2C | Business to Consumer |
| 10. | BBU | Baseband Unit |
| 11. | BG | Bank Guarantee |
| 12. | BTS | Base Transceiver Station |
| 13. | CAA | Controlling Administrative Authorities |
| 14. | CAGR | Compound Annual Growth Rate |
| 15. | CAPEX | Capital Expenditure |
| 16. | CMSP | Cellular Mobile Service Providers |
| 17. | CP | Consultation Paper |
| 18. | CUG | Closed User Group |
| 19. | DAS | Distributed Antenna System |
| 20. | DCI | Digital Connectivity Infrastructure |
| 21. | DCIP | Digital Connectivity Infrastructure Provider |
| 22. | DoT | Department of Telecommunications |
| 23. | ECN | Electronic Communication Networks |
| 24. | ECS | Electronic Communication Services |

| Sl. No. | Acronym | Description |
|----------------|----------------|---|
| 25. | EMF | Electric and Magnetic Field |
| 26. | ETSI | European Telecommunications Standards Institute |
| 27. | FBG | Financial Bank Guarantee |
| 28. | FBO | Facilities-Based Operator |
| 29. | FTTX | Fiber to the X |
| 30. | GIS | Geographic Information System |
| 31. | GMPCS | Global Mobile Personal Communication by Satellite |
| 32. | HLR | Home Location Register |
| 33. | IBS | In-building Solutions |
| 34. | IEC | International Electrotechnical Commission |
| 35. | IEEE | Institute of Electrical and Electronics Engineers |
| 36. | IETF | Internet Engineering Task Force |
| 37. | ILD | International Long Distance |
| 38. | IMDA | Infocomm Media Development Authority |
| 39. | IN | Intelligent Network |
| 40. | IoT | Internet of Things |
| 41. | IP-I | Infrastructure Provider - I |
| 42. | IP-II | Infrastructure Provider - II |
| 43. | IPTV | Internet Protocol television |
| 44. | IPv6 | Internet Protocol version 6 |
| 45. | IRU | Indefeasible Right of Use |
| 46. | ISO | International Standards Organization |
| 47. | ISP | Internet Service Provider |
| 48. | ITU | International Telecommunication Union |

| Sl. No. | Acronym | Description |
|----------------|----------------|---------------------------------------|
| 49. | IXP | Interconnect Exchange Provider |
| 50. | LCO | Local Cable Operator |
| 51. | LF | License Fee |
| 52. | LTE | Long Term Evolution |
| 53. | M2M | Machine to Machine |
| 54. | MBBL | Model Building Bye Laws |
| 55. | MEF | Metro Ethernet Forum |
| 56. | MNO | Mobile Network Operator |
| 57. | MoHUA | Ministry of Housing and Urban Affairs |
| 58. | MORAN | Multi-Operator Radio Access Network |
| 59. | MSC | Mobile Switching Centre |
| 60. | MVNO | Mobile Virtual Network Operator |
| 61. | NDCP | National Digital Communication Policy |
| 62. | NLD | National Long Distance |
| 63. | NSO | Network Service Operator |
| 64. | OEM | Original Equipment Manufacturer |
| 65. | OHD | Open House Discussion |
| 66. | OPEX | Operational Expenditure |
| 67. | OPGW | Optical Ground Wire |
| 68. | PBG | Performance Bank Guarantee |
| 69. | PDO | Public Data Office |
| 70. | PDOA | Public Data Office Aggregator |
| 71. | PMRTS | Public Mobile Radio Trunking Service |
| 72. | PPP | Public Private Partnership |
| 73. | QoS | Quality of Service |
| 74. | RAN | Radio Access Network |

| Sl. No. | Acronym | Description |
|----------------|----------------|--|
| 75. | RoW | Right of Way |
| 76. | RU | Radio Unt |
| 77. | SBO | Service-Based Operator |
| 78. | SDN | Software Defined Network |
| 79. | SLA | Service Level Agreement |
| 80. | STU | State Transmission Utilities |
| 81. | TCPO | Town and Country Planning Organization |
| 82. | TEC | Telecommunication Engineering Centre |
| 83. | TIL | Telecom Infrastructure License |
| 84. | TRAI | Telecom Regulatory Authority of India |
| 85. | TSP | Telecom Service Provider |
| 86. | UASL | Unified Access Services License |
| 87. | UL | Unified License |
| 88. | ULF | Unified Licensing Framework |
| 89. | UL-DCIP | Unified License - Digital Connectivity Infrastructure Provider |
| 90. | UL-VNO | Unified License - Virtual Network Operator |
| 91. | VNO | Virtual Network Operator |
| 92. | VSAT | Very Small Aperture Terminal |
| 93. | WOL | Wireless Operating License |
| 94. | WPC | Wireless Planning and Coordination |
| 95. | Wi-Fi | Wireless Fidelity |
| 96. | Wi Max | Worldwide Interoperability for Microwave Access |
| 97. | WTA | Wireless Telegraphy Act |