Consultation Paper No. 2/2023

भारतीय दूरसंचार विनियामक प्राधिकरण

Telecom Regulatory Authority of India

Consultation Paper on

Telecommunication Infrastructure Sharing,

Spectrum Sharing, and Spectrum Leasing

New Delhi, India

13th January 2023

Mahanagar Doorsanchar Bhawan, Jawahar Lal Nehru Marg, New Delhi- 110002

Written Comments on the Consultation Paper are invited from the stakeholders by 10th February 2023 and counter-comments by 24th February 2023. Comments and counter-comments will be posted on TRAI's website www.trai.gov.in.

The comments and counter-comments may be sent, preferably in electronic form, to Shri Akhilesh Kumar Trivedi, Advisor (Networks, Spectrum and Licensing), TRAI on the email ID advmn@trai.gov.in. For any clarification/ information, he may be contacted at Telephone No. +91-11-23210481.

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CHAPTER-1: INTRODUCTION

A. DoT's Reference Dated 07.12.2021

1.1 The Department of Telecommunications (DoT), through its letter No. 20-405/2013-AS-I dated 07.12.2021 (a copy of which is enclosed as **Annexure 1.1**), sent a reference to TRAI (also referred to as "the Authority") and requested TRAI to furnish recommendations under Section 11(1)(a) of TRAI Act, 1997 (as amended) on allowing sharing of core network elements such as MSC, HLR, IN etc., among telecom operators. The said reference is reproduced below:

"The Department of Telecommunications has received request from Cellular Operator Association of India (COAI) for allowing sharing of core network elements also such as Mobile Switching Center (MSC), Home Location Register (HLR), Intelligent Network (IN), etc., among telecom operators. The copy of COAI reference is enclosed.

2. At present, as per the provisions contained in Unified License, the sharing of active infrastructure is limited to antenna, feeder cable, Node B, Radio Access Network (RAN) and transmission system only. The relevant condition of Unified License Agreement is reproduced as under:

> *"33. Sharing of infrastructure:*
>
> *33.1 Sharing of active/ passive infrastructure shall be governed by the terms and conditions of respective service authorization and amendment/guidelines to be issued by the Licensor from time to time.*
>
> *33.2 Sharing of Active infrastructure amongst Service Providers based on the mutual agreements entered amongst them is permitted. Active infrastructure sharing will be limited to antenna, feeder cable, Node B, Radio Access Network (RAN) and transmission system only. Sharing of infrastructure related to Wi-Fi equipment such as Wi-fi router, Access Point etc. is allowed. Sharing of backhaul is also permitted.*

33.3 The Licensee may share its own active and passive infrastructure for providing other services authorized to it under any other telecom license issued by Licensor.

33.4 An authorized Gateway Hub operated by the satellite provider itself is permitted to be shared with the satellite bandwidth seeker."

3. In view of above, TRAI is requested to submit its recommendations under Section 11(1)(a) of TRAI Act, 1997 (as amended) on allowing sharing of core network elements also such as MSC, HLR, IN etc., among telecom operators."

1.2 Along with the afore-mentioned reference dated 07.12.2021, DoT also enclosed the COAI's representation dated 29.11.2021 on the subject - 'Facilitating the Infrastructure Sharing between the Telecom Operators'. Through the said representation, COAI had requested DoT to allow sharing of core network elements such as MSC, HLR, IN etc., between the telecom operators for the following reasons:

(a) Telecom being capital intensive needs huge investments for growth and expansion of service. Therefore, it is important for telecom service providers (TSPs) to have a model which enables them to share infrastructure i.e., passive, active and core, to reduce CAPEX, OPEX and maximise network capacity and capabilities.

(b) As per BEREC[1], there can be a cost saving of 16%-35% in passive infrastructure sharing in both CAPEX and OPEX. The cost saving can be as much as 45% in case of active infrastructure sharing.

(c) In addition to the cost savings, sharing the active infrastructure will provide following benefits:

(i) Avoid duplication of investment by the TSPs

(ii) Improved quality of service

(iii) Positive incentives to provide service in underserved areas

(iv) Attract investment from the entities providing infrastructure funds

[1] The Body of European Regulators for Electronic Communications (BEREC) is the regulating agency of the telecommunication market in the European Union.

(v) Help TSPs to concentrate on their core business/ competency

(vi) Accelerate roll out of digital services

(d) Currently active infrastructure sharing is allowed to TSPs for only antenna, feeder cable, Node B and transmission systems.

(e) The Policy of infrastructure sharing should be further liberalized to allow sharing of core infrastructure such as MSC, HLR, IN etc., among licensees having Unified License (Access Authroization).

(f) Sharing of core network elements such as MSC, HLR, IN etc. among the TSPs will reduce the cost for the TSPs and facilitate faster rollout.

1.3 Subsequently, COAI through its letter dated 04.01.2022 addressed to DoT with a copy to TRAI, informed that COAI has deliberated the issue internally with its members and, at present, it does not wish to pursue this subject any further.

B. DoT's Reference Dated 10.02.2022

1.4 Thereafter, DoT through its letter No. 20-405/2013-AS-I dated 10.02.2022 **(Annexure-1.2)** mentioning its earlier reference dated 07.12.2021, stated as below:

"2. In order to promote optimum resource utilization among the licensees, it is proposed to allow sharing of all kinds of telecom infrastructure and network elements among all categories of service providers, licensed under the Section 4 of Indian Telegraph, Act, 1885, for provision of authorized telecom services.

3. Therefore, TRAI is requested to submit its recommendations under Section 11 (1) (a) of TRAI Act, 1997 (as amended) on this issue."

C. Issues Relating to Sharing and Leasing of Spectrum

1.5 In the year 2020, during the TRAI's consultation process on 'Methodology of applying Spectrum Usage Charges (SUC) under the weighted average method of SUC assessment, in cases of Spectrum Sharing', a few stakeholders had requested the Authority that inter-band spectrum sharing as well as leasing of

spectrum should be permitted in the country. The Authority considered the requests from such stakeholders, and it was observed that the requests such as permitting inter-band spectrum sharing, and leasing of spectrum etc., could involve larger issues, and modalities also need to be worked out, which need to be well-examined and consulted with the stakeholders. As the issues related to inter-band spectrum sharing and leasing of spectrum were not part of the consultation process, at that point of time, the Authority decided that these issues will be examined separately.

1.6 The Authority has decided to take up the issues related to spectrum sharing and leasing of spectrum through this consultation paper.

D. The Present Consultation Paper

1.7 This consultation paper has been prepared to discuss and deliberate the issues related to telecommunication infrastructure sharing, spectrum sharing and spectrum leasing. This chapter provides a background to the subject. Chapter-2 describes the existing Infrastructure sharing regime in India and discusses the issues related to infrastructure sharing. Chapter-3 discusses the issues related to spectrum sharing and spectrum leasing. Chapter-4 summarizes the issues for consultation.

CHAPTER-2: TELECOMMUNICATION INFRASTRUCTURE SHARING

A. Telecommunication Infrastructure

2.1 Telecommunications has been recognised the world-over as an important tool for socio-economic development for a nation. It is one of the prime support services needed for rapid growth and modernization of various sectors of the economy. Telecommunication infrastructure is the bedrock for reliable telecommunication services. With increasing digitalization, telecommunication infrastructure has become a crucial part of the digital economy. With the latest mobile technology (5G), telecom infrastructure will work as a backbone for every industry vertical.

B. Telecommunication Infrastructure Sharing

2.2 Recognizing the fact that the telecommunication infrastructure is highly capital intensive, infrastructure sharing among the telecom service providers is being promoted and facilitated globally. Infrastructure sharing enables speedy roll-out of telecommunication services, especially in developing countries. It helps in avoiding infrastructure duplication, and thereby, in bringing down the overall cost of the networks. Importantly, infrastructure sharing gears investment toward underserved areas.

2.3 Telecommunication infrastructure sharing can be divided into two broad categories viz. (a) passive infrastructure sharing, and (b) active infrastructure sharing. Passive infrastructure sharing is usually referred to as the sharing of space or physical supporting infrastructure such as dark fibre, right of way, duct space, tower, etc. Active infrastructure sharing is the sharing of electronic infrastructure of the telecommunication network including access network (consisting of antenna, feeder cable, base transceiver station, backhaul network etc.) and core network (consisting of server, switch, and other core functionalities).

2.4 ITU Recommendation ITU-T D.264 (04/2020)[2] on 'Shared uses of telecommunication infrastructure as possible methods for enhancing the efficiency of telecommunications' defines active and passive infrastructure sharing as below:

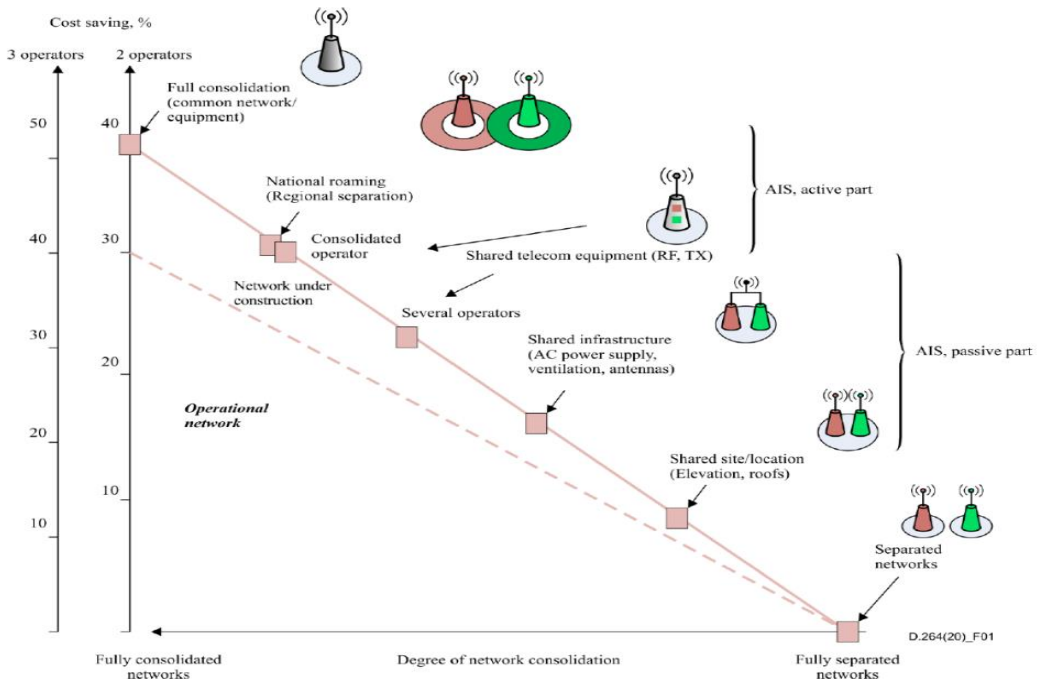
"Active infrastructure sharing: Sharing of radio access network elements, e.g., antenna, base transceiver stations and radio network controllers.

Passive infrastructure sharing: Sharing of passive elements of the network infrastructure e.g., masts, containers, towers, power supply and air conditioning equipment."

2.5 The ITU recommendation ITU-T D.264 (04/2020) also shows a potential scenario of cost savings depending on the number of cooperating operators and the option they have selected for network sharing, as reproduced below:

Figure 2.1

Cost savings depending on the selected option of network sharing[3]



[2] https://www.itu.int/rec/T-REC-D.264-202004-I

[3] Source: ITU Recommendation ITU-T D.264 (04/2020) on 'Shared uses of telecommunication infrastructure as possible methods for enhancing the efficiency of telecommunications

2.6 The afore-mentioned ITU recommendation ITU-T, D.264 (04/2020) suggests that infrastructure sharing has a direct impact on costs, and subsequently on tariffs and investment; it may also enhance competition in the telecommunication market. According to the ITU recommendation using the passive infrastructure sharing model can lead to the lowering of the telecommunication tariff by 30%; adding the active infrastructure sharing model, including when enabled by aggregation of frequency bands assigned to operators who have acquired property rights over the spectrum to enable active infrastructure sharing implementation, can raise the savings of customers to 50 to 60%.

2.7 Report on infrastructure sharing[4], by Body of European Regulators for Electronic Communications (BEREC), provides a provisional analysis of infrastructure sharing arrangements, which are currently in place in many European countries. The report includes various scenarios of sharing arrangements, benefits and challenges, as well as future evolution of sharing arrangements due to 5G. The report indicates that as per the figures provided by some National Regulatory Authorities (NRAs), the cost saving is as shown in Table given below:

Table 2.1: Cost Saving from Infrastructure Sharing

Cost saving from passive infrastructure sharing	16%-35% CAPEX	16%-35% OPEX
Cost saving from active infrastructure sharing (excluding spectrum)	33%-35% CAPEX	25%-33% OPEX
Cost saving from active infrastructure sharing (including spectrum)	33%-45% CAPEX	30%-33% OPEX

4 https://www.berec.europa.eu/sites/default/files/files/document_register_store/2018/6/BoR_%2818%29_116_BEREC_Report_infrastructure_sharing.pdf

2.8 While telecommunication infrastructure sharing has many benefits, such as reduction in cost of deploying telecommunication networks, efficient utilization of infrastructure, faster geographic roll-out and lower consumer tariffs, there could be some potential risks associated with it such as partner conflict, technical incompatibilities, etc. Further, any technical fault occurring in the shared infrastructure could become a single point of failure and might affect the services of all TSPs, who are sharing the infrastructure.

C. Regulatory Initiatives for Facilitating Infrastructure Sharing

2.9 Initially, access service providers were permitted to share passive Infrastructure as per existing licensing conditions of Unified Access Service License (UASL) and Cellular Mobile Telecom Service (CMTS) license. Through a reference dated 08.11.2006, DoT sought the views of TRAI regarding bringing in an appropriate legislation/ amendment in the license agreement for ensuring effective sharing of new passive infrastructure (towers) by the mobile service providers. In response, the Authority, through its recommendations on 'Infrastructure Sharing' dated 11.04.2007, recommended, *inter-alia*, that the active infrastructure sharing limited to antenna, feeder cable, Node B, Radio Access network (RAN) and transmission system only should be allowed among licensed TSPs.

2.10 Based on these recommendations, DoT issued 'Guidelines on Infrastructure sharing among the Service Providers and Infrastructure Providers' dated 02.04.2008 **(Annexure 2.1)**. These guidelines provided, *inter-alia*, as below:
"Sharing of active infrastructure amongst Service Providers based on the mutual agreements entered amongst them is permitted. Active infrastructure sharing will be limited to antenna, feeder cable, Node B, Radio Access Network (RAN) and transmission system only. Sharing of the allocated spectrum will not be permitted. The licensing conditions of UASL/ CMTS will be suitably amended wherever necessary to permit such sharing."

2.11 Thereafter, DoT issued amendments to the UASL, CMTS License and Unified License (UL) dated 11.02.2016 **(Annexure 2.2),** through which, TSPs were permitted to share the active infrastructure limited to antenna, feeder cable, Node B, Radio Access Network (RAN) and transmission system only.

2.12 Subsequently, through the recommendations on 'In-Building Access by Telecom Service Providers' dated 20.02.2017, the Authority recommended, *inter-alia*, as below:

"(i) Considering the requirement of ubiquitous voice and data network inside the large public places/ commercial complexes/ residential complexes and considering the fact that it is not practical for each TSP to put its IBS and other telecom infrastructure inside such complexes, the requirement of sharing the In-building telecom infrastructure including IBS has become inevitable. Therefore, TSPs/ IP-Is should be mandated to share the in-building infrastructure (IBS, OFC and other cables, ducts etc.) with other TSPs, in large public places like Airports, hotels, multiplexes, etc., commercial complexes and residential complexes.

…

(iii) A system (time bound) may be developed, which may, inter-alia, include:

a. The seeker-TSP i.e. who wish to access the Cables/IBS installed by an existing TSP/IP-I (provider-TSP), should place its requirement in writing to such provider-TSP.

b. The provider-TSP shall respond in writing within 30 days' time. In case of denial of request to access the infrastructure, the provider-TSP shall give reasons and justification for denial.

(iv) Commercial terms for sharing of the in-building telecom infrastructure system, may be decided by the provider-TSP. However, the same shall be done in transparent, fair and nondiscriminatory manner."

2.13 After considering the afore-mentioned recommendations dated 20.02.2017, DoT issued an advisory dated 18.11.2019 **(Annexure 2.3)** for sharing of in-building infrastructure, wherein, it was mentioned that "*all the TSPs are advised*

to share the In-Building Infrastructure (IBS, OFC & other cables, ducts, etc.) with other TSPs, in all the existing Government/ public buildings/ places like Airports, Railway Stations, Bus Terminals, Metro Stations/ Lines, hospitals, etc., as per the terms and conditions of their respective licenses."

2.14 Thereafter, through the recommendations on 'Proliferation of Broadband Through Public Wi-Fi Networks' dated 09.03.2017, the Authority recommended, *inter-alia*, as below:

"The Department of Telecommunication (DoT) may amend the terms of the ISP license to allow for sharing of active infrastructure, in line with the Unified License (UL). Further, the Authority recommends that a clarification be provided in respect of all license categories, that sharing of infrastructure related to Wi-Fi equipment such as Wi-Fi router, Access point, and backhaul is also allowed."

2.15 After considering the afore-mentioned recommendations dated 09.03.2017, DoT issued amendments dated 06.04.2021 **(Annexure 2.4)** to UL, UASL and ISP License, permitting sharing of infrastructure related to Wi-Fi equipment such as Wi-Fi router, Access point, and backhaul.

D. The Present Infrastructure Sharing Regime in India

2.16 The Unified License (UL) and Unified License for VNO[5] (UL-VNO), contains two parts, viz. Part - I and Part - II. The Part - I (Chapter I to VII of UL and UL-VNO) contains terms and conditions which are applicable for all service authorizations under the License, whereas the Part - II (Chapter VIII to XVI of UL and Chapter VIII to XVII of UL-VNO) consists of chapters which contains terms and conditions specific to the respective service authorizations.

[5] VNO refers to Virtual Network Operator. As per the Guidelines for Grant of Unified License (Virtual Network Operators) dated 17.01.2022, VNOs are treated as extension of NSOs (Network Service Operators) or TSPs and they would not be allowed to install equipment interconnecting with the network of other NSOs.

2.17 The provisions relating to infrastructure sharing, given in the UL, are reproduced below:

(i) Chapter I: General Conditions

2. Scope of License:

2.4 Licensee shall make its own arrangements for all infrastructure involved in providing the service and shall be solely responsible for the installation, networking, operation and commissioning of necessary infrastructure, equipment and systems, treatment of subscriber complaints, issue of bills to its subscribers, collection of revenue, attending to claims and damages arising out of its operations etc. However, the Licensee may share the infrastructure as permitted under the scope of respective service authorization in PART-II of the Schedule to the License Agreement or as per the directions/ instructions issued by the Licensor from time to time.

(ii) Chapter V: Operating Conditions

33. Sharing of infrastructure

33.1 Sharing of active/ passive infrastructure shall be governed by the terms and conditions of respective service authorization and amendment/guidelines to be issued by the Licensor from time to time.

33.2 Sharing of Active infrastructure amongst Service Providers based on the mutual agreements entered amongst them is permitted. Active infrastructure sharing will be limited to antenna, feeder cable, Node B, Radio Access Network (RAN) and transmission system only. Sharing of infrastructure related to Wi-Fi equipment such as Wi-Fi router, Access Point etc. is allowed. Sharing of backhaul is also permitted.

33.3 The Licensee may share its own active and passive infrastructure for providing other services authorized to it under any other telecom license issued by Licensor.

33.4 An authorized Gateway hub operated by the satellite provider itself is permitted to be shared with the satellite bandwidth seeker.

(iii) Chapter VIII: Access Service

4. Technical & Operating Conditions

4.2 The sharing of infrastructure, owned, established and operated by the Licensee under the scope of this Authorization, is permitted as below:

4.2(i) Sharing of "passive" infrastructure viz., building, tower, dark fibre, duct space, Right of Way etc. with other Licensees.

4.2(ii) Provision of point to point bandwidth from their own infrastructure within their Service Area to other licensed telecom service providers for their own use. However, the Licensee hiring the bandwidth shall not resell such bandwidth.

4.3 Further, the Licensee may share its own active and passive infrastructure for providing other services authorized to it under the license.

4.4 Moreover, sharing of active infrastructure with other licensees shall be governed by the license conditions/amendments issued by the Licensor from time to time.

(iv) Chapter IX: Internet Service

2. Scope of Internet Service:

2.1(xi)The Licensee may share "passive" infrastructure namely building, tower, dark fibre, duct space, Right of Way owned, established and operated by it under the scope of this Authorization with other Licensees.

(v) Chapter-X: National Long-Distance Service

2. Scope of the NLD Service:

2.2(i) The Licensee can provide bandwidth to other telecom service licensee also.

2.2(ii) The Licensee may share "passive" infrastructure namely building, tower, dark fibre, duct space, Right of Way owned, established and operated by it under the scope of this Authorization with other Licensees.

…

6. Technical Conditions

6.1 A Licensee having license/ authorizations for both Commercial VSAT CUG Service and NLD Service is permitted to share VSAT Hub for the purpose of providing authorized services.

(vi) Chapter-XI:* International *Long Distance Service

2. Scope of ILD Service

2.4(ii) The Licensee may share "passive" infrastructure namely building, tower, dark fibre, duct space, Right of Way owned, established and operated by it under the scope of this Authorization with other Licensees.

2.4(i) The Licensee may provide international bandwidth on lease to Resellers who are issued license for 'Resale of IPLC' under Section 4 of Indian Telegraph Act, 1885.

(vii) Chapter XII: GMPCS Service

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(viii) Chapter XIII: PMRTS Service

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(ix) Chapter-XIV: Commercial VSAT CUG Service

2. Scope of VSAT CUG Service:

2.1(i)(b) VSAT licensee after obtaining ISP license may use same Hub station and VSAT (remote station) to provide Internet service directly to the subscribers, and in this case VSAT (remote station) may be used as a distribution point to provide Internet service to multiple independent subscribers.

2.1(i)(c) Backhaul connectivity for cellular mobile services through satellite using VSAT to the Access Service providers.

2.1(i)(d) Backhaul connectivity using VSAT to Access Service Providers for establishing Wi-Fi hotspots.

2.1(i)(e) The VSAT terminal of the Commercial VSAT CUG Service provider, which is used to provide cellular mobile backhaul link or Wi-Fi hotspot backhaul link, is to be located in the service area of the Access service provider, where the backhaul link is used. However, the VSAT hub can be located anywhere in the country. The link from the hub station to the respective network element of the cellular mobile network can be provided through the terrestrial connectivity obtained from an authorized service provider.

2.1(iv) The Licensee can set up a number of CUGs using the shared hub infrastructure.

4. Technical Conditions:

4.3(vii) A Licensee having license/ authorizations for both Commercial VSAT CUG Service and NLD Service is permitted to share VSAT Hub for the purpose of providing authorized services.

(x) Chapter XV Audio Conferencing/Audiotex /Voice Mail

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(xi) Chapter-XVI: Machine to Machine (M2M)

4. Technical and Operating Conditions:

4(iv) The Licensee may share "passive" infrastructure namely building, tower, dark fibre, duct space, Right of Way owned, established and operated by it under the scope of this Authorization with other Licensees.

4(v) Moreover, sharing of active infrastructure with other licensees shall be governed by the license conditions/amendments issued by the Licensor from time to time.

2.18 In UL-VNO, most of the provisions relating to infrastructure sharing are similar to those provided in UL. However, there is an additional authorization for Access Service Category B in UL-VNO. The provisions relating to infrastructure sharing under this authorization are reproduced below:

Chapter XVI: Access Service Category B

4. Technical & Operating Conditions

4.1(i) Sharing of "passive" infrastructure viz., building, dark fiber, duct space, Right of Way, etc. with other Licensees TSPs.

4.1(ii) Provision of point to point bandwidth from their own infrastructure within their Service Area to other licensed telecom service providers for their own use. However, the Licensee hiring the bandwidth shall not resell such bandwidth.

4.2 Further, the Licensee may share its own active and passive infrastructure for providing other services authorized to it under the license.

4.3 Moreover, sharing of active infrastructure with other licensees shall be governed by the license conditions/amendments issued by the Licensor from time to time.

4.4 Location of switches and other network elements: The licensee shall install applicable system within its service area if required.

E. Examination of Issues

(1) Streamlining the Provisions Relating to Passive/ Active Infrastructure in Telecommunication Service Licenses

2.19 As indicated in the previous section, the Chapter-V (Operating Conditions) of the Part-I of UL contains provisions related to infrastructure sharing. These provisions apply to all the service authorizations under UL. Specific provisions related to infrastructure sharing are contained in the Part-II of the UL under individual service authorizations.

2.20 The provision related to sharing of active infrastructure under Chapter-V (Operating Conditions) of the Part-I of UL are reproduced below:

"33.2 Sharing of Active infrastructure amongst Service Providers based on the mutual agreements entered amongst them is permitted. Active infrastructure sharing will be limited to antenna, feeder cable, Node B, Radio Access Network

(RAN) and transmission system only. Sharing of infrastructure related to Wi-Fi equipment such as Wi-Fi router, Access Point etc. is allowed. Sharing of backhaul is also permitted."

2.21 As the above provision is mentioned under Chapter-V (Operating Conditions) of Part-I of UL, it applies to all the service authorizations under UL. However, it is understood that the above provision is relevant to only a few service authorizations such as access service and Internet service under UL. On the other hand, the provisions relating to passive infrastructure sharing, which are applicable to most of the service authorizations under UL, are mentioned individually under respective service authorizations. Further, it has been noticed that some of the authorizations, viz. GMPCS Service, PMRTS Service, Commercial VSAT CUG Service, and Audio Conferencing/ Audiotex/ Voice Mail Service, do not contain specific provisions relating to permission of passive infrastructure sharing.

2.22 In Unified License for VNO (UL-VNO), majority of the provisions on infrastructure sharing are similar to the provisions on infrastructure sharing under UL. However, certain differences have been noticed. For instance,

(i) In Internet services authorization under Unified License for VNO, it has been mentioned under the clause 2.1(vii) that "*the Licensee may share "passive" infrastructure namely building, tower, dark fiber, duct space, Right of Way owned, established and operated by it under the scope of this Authorization with other VNO Licensees.*" It means sharing of passive infrastructure is permitted only between VNOs and not with the network service operators (NSOs).

(ii) While the amendment permitting sharing of Wi-Fi equipment and infrastructure related to backhaul for Wi-Fi equipment has been made in UL, a similar amendment has not been made in UL-VNO.

2.23 Considering that the provisions relating to sharing of passive/ active infrastructure sharing should be clear and unambiguous, the Authority has,

through its letter dated 01.02.2022 **(Annexure 2.5)**, requested DoT to issue clarification/ amendment to license conditions so that sharing of active/ passive infrastructure can be further facilitated. In the recent recommendations on 'Use of Street Furniture for Small Cell and Aerial Fiber Deployment' dated 29.11.2022, the Authority has recommended, *inter-alia*, that "*DoT should immediately act on TRAI's letter dated 1st February 2022 (attached as Annexure III) and bring clarity on the provisions of sharing of infrastructure under different licenses to remove the ambiguity in infrastructure sharing provisions in Unified License mentioned in the Chapters related to generic conditions and authorization specific chapters.*"

(2) Scope of Passive/ Active Infrastructure Sharing

2.24 Passive Infrastructure Sharing: As discussed above, some of the licenses/ authorizations such as GMPCS Service, PMRTS Service, Commercial VSAT CUG Service, and Audio Conferencing/ Audiotex/ Voice Mail Service under UL, do not contain provisions relating to permission of passive infrastructure sharing. On the other hand, Infrastructure Provider (IP-I) registered companies are permitted to provide dark fibres, Right of Way, duct space, towers on lease/ rent out/ sale basis to TSPs. Therefore, *prima facie*, there appears to be no reason for not permitting licensed TSPs to share their passive infrastructure with other licensed TSPs.

2.25 Active Infrastructure Sharing: At present, Unified Licensees are permitted to share active infrastructure limited to antenna, feeder cable, Node B, Radio Access Network (RAN) and transmission system only. In addition, sharing of infrastructure related to Wi-Fi equipment such as Wi-Fi router, Access Point etc. is also permitted to Unified Licensees.

2.26 Within the ambit of active telecommunication infrastructure sharing, the radio access network (RAN) sharing is quite popular globally. The RAN sharing feature allows two or more TSPs to serve their customers by using a common RAN equipment, while keeping their core networks separate.

2.27 For sharing of RAN, two commonly used solutions are known as MORAN (Multi Operator RAN) and MOCN (Multi Operator Core Network). With MORAN, RAN is shared between two or more TSPs; however, the radio frequency spectrum is not shared. The customers of each TSP access the services of their respective TSPs through the radio frequency spectrum assigned to their respective TSPs.

2.28 With MOCN, two or more TSPs share the RAN as well as the radio frequency spectrum assigned to them. MOCN is a more resource efficient solution as it permits the TSPs to pool their respective radio frequency spectrum, resulting in improved spectral efficiency.

2.29 Implementation of RAN sharing through MORAN or MOCN is somewhat more involved than the implementation of site sharing. However, the cost saving potential of RAN sharing is much greater than site sharing.

2.30 Core Network Sharing: As per a 2019 report titled 'Infrastructure Sharing: An Overview' published by GSMA[6], sharing of core telecommunication network (servers and core network functionalities) enables greater cost-saving potential but is complicated to operate and to maintain strategic differentiation.

2.31 As discussed earlier, in the recent past, wireless telecommunication services have witnessed a remarkable technology innovation and transformation. Further, the lifespan of the new technologies has shortened with the passage of time. Adoption of new technologies requires a significant capital investment on the part of TSPs. For instance, the latest mobile network technology namely 5G requires substantial network densification. Further, to reap in the full benefits of 5G, the TSPs might have to move from 5G NSA[7] to 5G SA[8] mode, wherein fresh investment for deploying 5G core network would be required. 5G

[6] https://www.gsma.com/futurenetworks/wiki/infrastructure-sharing-an-overview/

[7] 5G NSA refers to 5G non stand alone. 5G NSA is a solution for 5G networks where the network is supported by the existing 4G infrastructure.

[8] 5G SA refers to 5G stand alone. 5G SA means a network that has its independent infrastructure and can stand on its own.

core networks are expected to involve a higher cost of deployment to meet throughput requirement and demand. Therefore, TSPs which are deploying 5G technology-based mobile networks might prefer sharing of their core network elements.

2.32 In case the scope of infrastructure sharing is enhanced to include all the network elements across all licenses/ authorizations, it is expected that it will help in increasing the utilization of network elements, and in bringing down the cost (both capital cost and operating cost) of network. Therefore, a proposition could be that all the network elements (including core network elements) may be permitted to be shared among licensees, not only for wireless networks but also for wireline/ fixed networks.

2.33 However, in case sharing of all the network elements across all licenses/ authorizations is permitted, there is a possibility that sufficient infrastructure may not be created and there could be a high level of dependency on shared network elements. Any failure in the shared network elements, particularly the core network elements, could become a single point of failure and may affect services of all TSPs which are involved in sharing. Therefore, it is felt that while permitting sharing of all the network elements across all licenses/ authorizations may be required to keep services affordable and help expedite the roll-out of services, there may be a need for some precautionary provisions to ensure network resilience.

2.34 In this background, the Authority solicits comments of stakeholders on the following set of questions:

Issues for Consultation

Q1. Should passive infrastructure sharing be permitted across all telecommunication service licenses/ authorizations? Kindly justify your response.

Q2. Should other active infrastructure elements deployed by service providers under various licenses/ authorizations, which are not permitted to be shared at present, be permitted to be shared among licensees of telecommunication services?

Q3. If your response to the Q2 is in the negative, which active infrastructure elements should not be permitted to be shared? Further, which active infrastructure elements should be permitted to be shared with which licensees/ authorization holders? kindly provide details for each authorization with detailed justification.

Q4. In case it is decided to permit sharing of any additional active infrastructure elements among licensees,

(a) What precautionary conditions should be put in place to avoid disruption in telecommunication services due to any unforeseen situation? The response may be provided for each active infrastructure element.

(b) Whether there is a need to have a provision for permission from/ intimation to the Licensor before commencement of such sharing? If yes, what provisions and timelines need to be prescribed for each active infrastructure element?

Q5. Whether any other amendment is required to be made in the telecommunication services licenses/ authorizations with respect to the provisions relating to both active and passive infrastructure sharing to bring clarity and remove anomaly? If yes, clause-wise suggestions in the telecommunication services licenses/ authorizations may kindly be made with detailed justification.

(3) Sharing of Government Funded Infrastructure

2.35 In the past, the Government has been striving to enhance coverage and connectivity in the hitherto uncovered areas of the country. The Universal Service Support Policy for provision of telecom facilities in rural and remote areas of the country came into effect on 01.04.2002. Universal Service Obligation Fund (USO Fund) was set up by an Act of Parliament in December 2003 by amending the Indian Telegraph Act, 1885. The USO Fund was established with the fundamental objective of providing access to basic telegraph services to people in remote and rural areas at affordable and reasonable prices. Subsequently, the scope of USO Fund was widened to provide access to telegraph services (including mobile services, broadband connectivity, and ICT infrastructure creation) in rural and remote areas.

2.36 The New Telecom Policy 1999, provided that the resources for meeting the universal service obligation would be raised through a 'Universal Access Levy', which would be a percentage of the revenue earned by the operators under various licenses[9]. The present License fee @ 8% of the adjusted gross revenue (AGR) is inclusive of USO Levy which is presently 5% of AGR. The Authority, through its recommendations on 'Definition of Revenue Base (AGR) for the Reckoning of License Fee and Spectrum Usage Charges' dated 06.01.2015, had recommended, *inter-alia*, that "the component of USO levy should be reduced from the present 5% to 3% of AGR for all licenses with effect from 1st April 2015".

2.37 For commercially non-viable rural and remote areas, the USO Fund provides subsidy support in the form of Net Cost or Viability Gap Funding (VGF) to incentivize telecom service providers. DoT has provided funds through USOF to TSPs (both public and private) to deploy telecom infrastructure (passive and/ or active). A few ongoing USOF schemes are given below:

(a) Comprehensive Telecom Development Plan (CTDP) for the North-Eastern Region (NER): The project aims at providing mobile coverage to the States

[9] https://usof.gov.in

of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura.

(b) Comprehensive Telecom Development Project (CTDP) for islands: The project aims to provide connectivity to Andaman and Nicobar Islands and Lakshadweep via Submarine Optical Fiber Cable and Bandwidth Augmentation to the Island groups.

(c) Uncovered villages: This scheme aims to provide connectivity to various uncovered villages and aspirational villages.

(d) Left Wing Extremism (LWE) affected areas: The scheme aims to connect all rural and far-flung villages in the LWE zones ensuring proper delivery of citizen services and empowered security forces.

(e) Other projects: Other projects are approved to harness new digital technologies and platforms to unlock productivity and reach unserved and underserved markets, leading to economic growth and development and ensuring access to next-generation services for its citizens.

2.38 USO Fund projects are assigned to TSPs on nomination or tender basis. In the case of tender to award project/ scheme, the evaluation of bids is carried out, including, based on the least quoted total subsidy, that is, the subsidy that will be provided from the USOF. The Universal Service Provider (USP) is required to set up, operate, maintain, and manage the respective infrastructure as per the terms and conditions laid down in the agreement (one of USOF agreements may be accessed at the URL: https://usof.gov.in/assets/data_report/1669358119_d54ffce192d23c1fd991.pdf). The work related to the provision of mobile services in the identified areas are generally awarded through open competitive bidding process.

2.39 In general, the infrastructure, created under the USO Fund project, is owned by the respective USPs i.e., TSP to whom USOF project is assigned. USP, at its discretion, may share its infrastructure with other TSPs, subject to compliance of the guidelines and instructions issued by DoT.

2.40 One argument could be that the infrastructure and coverage being created using the USO Fund should not create connectivity islands only meant for the subscribers of the USP. A proposition could be that such infrastructure can be made available to all TSPs through mandatory infrastructure sharing, so that the benefit is wide reached and not restricted to the subscribers of the USP. The contrary argument could be that the USP might not have sufficient capacity, or there could be some technical difficulties in sharing with other TSPs.

2.41 In this background, the Authority solicits comments of stakeholders on the following set of questions:

Issues for Consultation

Q6. Should there be any obligation on telecom service providers to share infrastructure that has been funded, either partially or fully, by the Government through Universal Service Obligation (USO) Fund or otherwise, with other telecom service providers? Kindly justify your response.

Q7. In case it is decided to impose some obligations on telecom service providers to share the infrastructure funded by Government with other telecom service providers, is there a need to provide a broad framework for sharing of such infrastructure? If yes, kindly suggest the key aspects of such framework with detailed justification.

Q8. Any other suggestion to facilitate infrastructure sharing may kindly be made with proper explanation and justification.

(4) Connectivity Issues Faced by the Subscribers in Remote and Far-flung Areas of the Country

2.42 Through another reference dated 27.04.2022, DoT requested the Authority to examine the possibilities of provisions in license agreements for mandatory roaming arrangements among telecom service providers in remote areas of Hill States, LWE affected areas and along International Border, and furnish recommendations on the subject. However, through a subsequent letter dated 03.01.2023, DoT conveyed that the reference dated 27.04.2022 has been reconsidered and it has been decided to withdraw the reference dated 27.04.2022.

2.43 While the reference dated 27.04.2022 has been withdrawn by DoT, the issue of subscribers facing hardship in remote and far-flung areas of the country continues to persist. In general, the remote and far-flung areas of the country, particularly those in Hill States, have limited mobile connectivity due to difficulty in accessibility of land terrain, low population density, and less techno-commercial interests of service providers. The number of mobile service providers at a particular location in such remote areas is, generally, quite less. It has been observed that a subscriber, using network of a particular service provider and roaming in remote and far-flung areas, faces the problem of no telecom coverage even if the networks of other service providers is present in the area.

2.44 In view of the hardships faced by subscribers in remote and far-flung areas of the country, there appears to be a need to explore ways to address the issue. One possible way could be to mandate the sharing of infrastructure funded by the Government through USO Fund in remote and far-flung areas as an obligation. This has already been discussed in the earlier section.

2.45 As per the extant licensing regime in the country, roaming arrangements among telecommunication service licensees are permitted, but not mandated.

With a view to ease out the hardship faced by the subscribers due to connectivity issues in remote and far-flung areas, another possible approach could be to encourage roaming amongst mobile service providers in such areas. Towards this, the mobile service providers who permit the subscribers of other mobile service providers to roam onto their networks in remote and far-flung areas, could be incentivized. This may possibly nudge the mobile service providers to enter into roaming arrangements. In turn, this may help in easing out the connectivity issues faced by the subscribers in remote and far-flung areas, particularly those in Hill States.

2.46 In this background, the Authority solicits comments of stakeholders on the following set of questions:

Issues for consultation

Q9. What measures could be taken to encourage roaming arrangements among telecom service providers in remote and far-flung areas? What could be the associated regulatory concerns and what steps could be taken to address such concerns? Kindly provide details on each of the suggested measures with justification.

Q10. What could be the other ways to ease out the hardship faced by the subscribers in remote and far-flung areas due to connectivity issues of the home network provider? Kindly provide detailed response with justification.

CHAPTER-3: SHARING AND LEASING OF SPECTRUM

A. Sharing of Spectrum

3.1 Radio frequency spectrum is a scarce natural resource. With growing data usage, digitalization of services and uptake of video consumption over cellular network, demand for spectrum has increased significantly. Considering the growing demand for spectrum by not only the TSPs but also by other users such as Defence, Space, Railways, public sector undertakings (PSUs), captive users etc., it has become necessary for the Government to ensure efficient and optimal utilization of spectrum. Any amount of frequency spectrum, if not use optimally and efficiently, results not only in financial loss to the Government, but also hinders socio-economic development of the country. Spectrum sharing is one of the techniques, by using which, spectral efficiency can be increased.

3.2 The basic objective of spectrum sharing between TSPs is to enhance spectral efficiency by combining/ pooling the spectrum holding of two or more TSPs. If two TSPs pool their spectrum holdings, spectral efficiency increases non-linearly. For illustration, data rates achievable with 10 MHz of spectrum is much higher than two times the data rate achievable with 5 MHz of spectrum. Spectrum sharing can provide additional network capacities in places where there is network congestion due to spectrum crunch. Spectrum sharing makes use of carrier aggregation to achieve higher data rates.

3.3 Spectrum sharing could be of the following types:

(a) Intra-Band Spectrum Sharing: The TSPs holding spectrum in a frequency band, pool their spectrum holdings in that frequency band and use intra-band carrier aggregation.

(b) Inter-Band Spectrum Sharing: The TSPs holding spectrum in two different frequency bands, pool their spectrum holdings and use inter-band carrier aggregation.

3.4 Based on the TRAI's recommendations, DoT permitted intra-band spectrum sharing among access service providers and issued the 'Guidelines for Sharing of Access Spectrum by Access Service Providers' on 24.09.2015. These guidelines have been amended from time to time. At present, the amended 'Guidelines for Sharing of Access Spectrum' were issued on 11.10.2021 **(Annexure-3.1)** are in force.

3.5 As per the present licensing regime in the country, intra-band spectrum sharing between two TSPs is permitted. Stakeholders have been requesting to also permit inter-band spectrum sharing and leasing of spectrum. As indicated in the Chapter I of this Consultation Paper, during the consultation process on 'Methodology of applying Spectrum Usage Charges (SUC) under the weighted average method of SUC assessment, in cases of Spectrum Sharing' in the year 2020, a few stakeholders had requested the Authority that inter-band spectrum sharing as well as leasing of spectrum should be permitted in the country. The Authority considered the requests from such stakeholders, and it was observed that the requests such as permitting inter-band spectrum sharing, and leasing of spectrum etc., could involve larger issues, and modalities also need to be worked out, which need to be well-examined and consulted with the stakeholders. As the issues related to inter-band spectrum sharing and leasing of spectrum were not part of the consultation process, at that point of time, the Authority decided that these issues will be examined separately.

3.6 Authorised Shared Access (ASA) of Spectrum: Certain quantum of frequency spectrum in IMT identified bands is assigned to Government/ other users, the utilization of which, may not necessarily be optimum (entire spectrum, at all places, at all times may not be in use). To make available such frequency spectrum to the TSPs on secondary basis, some countries have permitted authorised shared access (ASA) of spectrum. ASA involves the concept of primary and secondary users, wherein a secondary user can use the same frequency spectrum when the primary user is not using it. In view of the

growing data usage amongst consumers owing to increased digitalization and uptake of data hungry applications, and increasing proliferation of IoT based solutions, there could be a need to explore use of spectrum sharing using ASA in India.

3.7 Licensed Assisted Access (LAA) of Spectrum: Licensed assisted access (LAA) is a feature that leverages the frequency spectrum in unlicensed bands (such as the Wi-Fi spectrum in 5 GHz frequency band) in combination with the spectrum in licensed frequency bands. LAA uses carrier aggregation to combine unlicensed spectrum with the licensed spectrum. The carrier aggregation of spectrum provides a fatter pipe with faster data rates and more responsive user experience. By maintaining a persistent anchor in the licensed spectrum that carries all the control and signalling information, the user experience could be made seamless and reliable. LAA has been standardized by the 3GPP in its Release-13. LAA adheres to the requirements of the Listen Before Talk (LBT) protocol. Several countries such as USA, Thailand, Russia, Hong Kong, Italy, Turkey have already deployed LAA networks. As per GSA report of March 2020, 38 operators were investing in LAA across 21 countries; nine of them were understood to have deployed or launched LAA in six countries and 131 devices were identified that supported LAA from 33 vendors.

3.8 In view of the above, the possible options for sharing of frequency spectrum for the purpose of usage in IMT are being discussed below:

(1) Inter-band Spectrum Sharing Among TSPs

3.9 As already indicated above, under inter-band spectrum sharing, two or more TSPs holding frequency spectrum in different spectrum bands, pool their frequency spectrum and use inter-band carrier aggregation. The inter-band spectrum sharing is implemented through a common radio access network (RAN). Inter-band spectrum sharing could be implemented in entire LSA or only in certain specific areas based on the requirement.

3.10 As already mentioned, based on the TRAI's recommendations of 2014, intra-band spectrum sharing between two TSPs (i.e., where both the TSPs have frequency spectrum in the same band) was permitted in 2015. While providing its recommendations on Spectrum Sharing dated 21.07.2014, the Authority had recorded the following:

"..though some of the service providers have requested to allow inter-band spectrum sharing, the Authority, as of now, has not agreed to this because such arrangements will lead to Mobile Virtual Network Operators (MVNOs) like situation which is not permitted in the present licensing framework. The Authority would like to mention here that recently, the DoT has sent a reference to the Authority seeking recommendation on Virtual Network Operators and associated issues. Therefore, the Authority may later review its recommendation of permitting 'only intra-band sharing'."

3.11 In India, VNO regime was put in place in the year 2016. It will be worthwhile to explore as to whether inter-band spectrum sharing can now be allowed in the country, at this stage. It requires to be examined as to what could be the benefits and concerns in permitting inter-band spectrum sharing.

3.12 Spectrum assigned through auction is technology agnostic i.e., any spectrum in any frequency band can be used to deploy any technology as per Notice Inviting Application (NIA) for auction of spectrum. Earlier, the TSPs were using frequencies in specific bands for provision of specific technologies. For instance, 2100 MHz was used for 3G, 900 MHz and 1800 MHz bands were used for 2G, 800 MHz was used for CDMA and so on. However, at present, most of the spectrum bands are being used for provision of LTE.

3.13 Internationally, spectrum sharing is generally treated as a part of active infrastructure sharing. As per the data available on ITU website[10], spectrum sharing is permitted in 109 countries, including Australia, Canada, China,

[10] Source: https://www.itu.int/net4/itu-d/icteye#/query

Finland, France, Germany, Hong Kong, Iran, Japan, Korea, New Zealand, Norway, Pakistan, Philippines, Saudi Arabia, Singapore, South Africa, Spain, Sweden, United Kingdom, United States. However, the information provides no distinction between the kind of spectrum sharing (intra-band sharing, or inter-band sharing) permitted in these countries.

3.14 Permitting inter-band spectrum sharing might also work as a facilitator in active infrastructure sharing. On the other hand, as the number of TSPs in the wireless access services segment has reduced to four, it needs to be examined as to what could be its effect on competition and dynamics of auction of spectrum. For instance, if a TSP decides not to acquire spectrum through auction in a spectrum band, and to use inter-band spectrum sharing with another TSP instead, the dynamics of spectrum auction could get affected as it might become difficult to discover the true market price through auction. Further, at present, the TSPs are permitted to surrender their spectrum holding after a lock-in period of 10 years, one may contend that a TSP could surrender its spectrum in a frequency band and start sharing spectrum in the same frequency band of another TSP, which could result in loss to the exchequer. Thus, there may be a need to create some conditions so that there is no misuse of the provisions of inter-band sharing. A contrary view could be that each TSP acquires spectrum in auction as per its network's need and business considerations, and spectrum sharing is usually resorted to by the TSPs to fulfil their dynamic need of spectrum in certain geographies.

3.15 In case, it is decided to permit inter-band spectrum sharing in the country, the process of spectrum sharing, associated charges, and terms & conditions will also need to be prescribed. It also needs to be examined as to whether the procedure prescribed for intra-band spectrum sharing could be made applicable to inter-band spectrum sharing as well, or certain changes are required to be made.

3.16 In this background, the Authority solicits comments of stakeholders on the following set of questions:

Issues for Consultation

Q11. Whether inter-band access spectrum sharing among the access service providers should be permitted in the country?

Q12. In case it is decided to permit inter-band access spectrum sharing among access service providers, please provide detailed inputs to the following questions:

(a) What measures should be put in place to avoid any potential adverse impact on competition and dynamics of spectrum auction? Kindly justify your response.

(b) Considering that surrender of spectrum has been permitted in the country, what provisions need to be included in the guidelines for inter-band access spectrum sharing so that any possible misuse by the licensees could be avoided? Kindly justify your response.

(c) What should be the broad framework for inter-band access spectrum sharing? Whether the procedure prescribed for intra-band access spectrum sharing could be made applicable to inter-band access spectrum sharing as well, or certain changes are required to be made?

(d) What should be the associated charges, and terms & conditions for inter-band access spectrum sharing?

Q13. Any other issues/ suggestions relevant to the spectrum sharing between access service providers, may be submitted with proper explanation and justification.

(2) Authorised Shared Access (ASA) of Spectrum

3.17 As indicated earlier, in India, certain quantum of the globally harmonized spectrum bands for IMT services has been assigned/ earmarked for Government use and/ or other services. However, the spectrum so assigned/ earmarked may not be utilized efficiently (entire spectrum, at all places, at all times may not be in use). Moreover, considering the increasing data usage owing to increasing digitalization, uptake of data hungry applications, proliferation of IoT based solutions, there may be a need to explore putting in place a regime for authorised shared access of spectrum, wherein the spectrum assigned/ earmarked for Government/ other users on primary basis could be used by the access service providers on secondary basis. National Digital Communications Policy (NDCP) 2018 under its 'Connect India' mission, recognizes 'promoting the co-use/ secondary use of spectrum' as one of the action points for making adequate spectrum available to be equipped for the new broadband era.

3.18 Some countries have already implemented spectrum sharing between different type of users, involving the concept of primary and secondary users, wherein secondary user can use the same frequency spectrum wherever and whenever the primary user is not using it. In Europe, such authorisation given to the mobile network operators is termed as Licensed Shared Access (LSA) and in USA, it is termed as Spectrum Access System (SAS).

3.19 LSA technique implemented in Europe: In Europe, LSA technique has been implemented to enable mobile network operators to deploy their mobile broadband networks in 2.3 GHz band, in which the incumbents (Government users etc.) were already operating. The LSA technique facilitates spectrum sharing between a mobile network operator and the incumbents with licensing conditions and rules. LSA is a repository-based method[11] where the spectrum usage of primary users is stored in databases. This information is then used to

[11] https://www.oulu.fi/en/theses/special-applications-and-spectrum-sharing-lsa

guarantee interference-free transmission to the primary users. The LSA controller computes spectrum availability in the spatial, frequency and time domains. More specifically, the LSA controller computes exclusion, protection and restriction zones that are geographical areas within which the secondary users are not allowed to have active radio transmitters, areas within which incumbent receivers will not be subject to harmful interference and areas within which secondary users are allowed to operate radio transmitters with restrictions, respectively. Secondary users use an operation, administration and management (OAM) system to manage the use of licensed spectrum based on the LSA controller information.

3.20 SAS technique implemented in the USA: In 2015, Federal Communications Commission (FCC) adopted rules for shared commercial use of the 3550-3700 MHz band (3.5 GHz band). FCC established the Citizens Broadband Radio Service (CBRS) and created a three-tiered access and authorization framework to accommodate shared federal and non-federal use of the band. The three tiers of users for this spectrum are as below:

(a) Incumbent, such as the United States Navy and fixed satellite;

(b) Priority Access License (PAL), which are typically carriers that pay to license part of the spectrum; and

(c) General Authorized Access (GAA) such as unlicensed enterprises that utilize this spectrum for private networks.

3.21 Because these tiers concurrently share CBRS spectrum amongst them, the FCC requires that GAA users cannot interfere with PAL or incumbent users, and PAL users cannot interfere with incumbent users. Access and operations are managed by an automated frequency coordinator, known as a Spectrum Access System (SAS). When managing spectrum access, SAS may incorporate information from an Environmental Sensing Capability (ESC), a sensor network that detects transmissions from Department of Defence radar systems and transmits that information to the SAS. Both SAS and ESC are approved by the FCC.

3.22 In view of the above, authorised shared access could be used in the country to share spectrum assigned to the government agencies or other entities, who will be the primary users, with the access service providers as secondary users.

3.23 It is worth mentioning that LSA and SAS techniques have been adopted in Europe and the USA respectively for specific frequency band(s) which were directly not available to mobile network operators for IMT use. For example, Europe has adopted LSA based implementation for 2.3 GHz band, and FCC has used SAS based implementation for CBRS in 3.5 GHz band.

3.24 Therefore, identifying the frequency bands, which are not directly available (partially or entirely) to access service providers for IMT use, is the first step towards adoption of authorized shared access (ASA) of spectrum for secondary use in the country. Further, the biggest challenge would be that the incumbents, who have exclusive right to use a frequency band, may not be willing to implement ASA based spectrum sharing, as they may have apprehensions regarding interference from secondary users. Therefore, there might be a need to adopt measures to encourage and motivate the incumbent users for participation in the spectrum sharing regime.

3.25 Further, ASA technique could also be used for spectrum sharing on dynamic basis among access service providers. However, similar to inter-band spectrum sharing, it could have some potential adverse effects on competition and dynamics of auction of spectrum. Further, the possibility of misuse of such a regime cannot be ruled out considering that surrender of spectrum has been permitted (as discussed in para 3.14). Thus, there could be some regulatory concerns which may need to be examined. After examination, in case it is decided to implement ASA technique for spectrum sharing on dynamic basis among access service providers, an enabling framework and other terms and conditions may need to be prescribed.

3.26 In this background, the Authority solicits comments of stakeholders on the following set of questions:

Issues for Consultation

Q14. Whether there is a need to explore putting in place a regime to implement Authorised Shared Access (ASA), wherein an access service provider as a secondary user could use the frequency spectrum assigned to a non-TSP primary user (government agencies and other entities) on a dynamic spectrum sharing basis? Kindly justify your response.

Q15. In case it is decided to implement ASA technique for secondary use of frequency spectrum assigned to non-TSP primary users, please provide your response to the following questions with detailed justification:

(a) What are the potential spectrum bands in which ASA implementation can be considered?

(b) What measures should be taken to encourage and motivate the incumbent users for participation in the spectrum sharing through ASA technique?

(c) What should be the broad framework for implementation of ASA technique?

(d) Is there a need for putting in place a mechanism for dispute handling including interference issues in case of ASA? If yes, what should be the framework?

(e) What methodology should be adopted for spectrum assignment to secondary users? What could be the spectrum charging mechanism for such assignment?

(f) Who should be entrusted the work of managing shared access of spectrum?

Q16. Whether there is a need to permit the ASA technique-based dynamic spectrum sharing among access service providers? If yes,

(a) What are the possible regulatory issues involved and what could be the possible solutions?

(b) What measures should be put in place to avoid any adverse impact on competition and dynamics of spectrum auction?

Kindly justify your response.

Q17. In case it is decided to permit ASA technique-based dynamic spectrum sharing among access service providers in the country, please provide your response to the following questions with justification:

(a) Whether there is a need for prescribing any framework for such shared use? If yes, what should be the framework?

(b) Whether access service providers should be required to obtain approval or intimate to DoT before entering into such arrangement?

(c) Whether any fee (one time, or recurring), should be prescribed on the spectrum sharing party(ies)? If yes, what should be the fee and who should be liable to pay such fee?

(d) What should be the treatment of spectrum shared through ASA technique for the purpose of computation of spectrum cap?

(e) Whether there is a need for an independent entity for managing spectrum access? If yes, who should be entrusted this work? If not, how should the spectrum access be managed?

(f) Is there a need for putting in place a mechanism for dispute handling including interference issues or should it be left to the access service providers? If yes, what should be the framework?

(g) What other terms and conditions should be applicable for the sharing parties?

Q18. Suggestions on any other spectrum sharing technique(s), which needs to be explored to be implemented in India, may kindly be made along with the relevant details and international practice. Details of likely regulatory issues with possible solutions, interference management, dispute handling etc. may also be provided.

B. Leasing of Spectrum

3.27 In spectrum leasing, a TSP, which has exclusive spectrum usage rights, leases a part of (or entire) spectrum holding to another TSP and/ or a private entity (for localized captive use), for a specified period. For such specified time period, the right gets transferred to the transferee entity and reverts to the transferor after expiry of the specified time period. The permission for leasing of spectrum may create secondary markets for spectrum usage rights among TSPs.

3.28 Recently, based on the TRAI's recommendations on 'Auction of Spectrum in frequency bands identified for IMT/5G' dated 11.04.2022, the TSPs with Access Service License/ Authorization have been permitted to lease frequency spectrum for the Captive Non-Public Network (CNPN). The guidelines for leasing of spectrum to CNPN Licensees have been issued by DoT through 'Guidelines for Captive Non-Public (CNPN) License' dated 27.06.2022 **(Annexure 3.2)**.

3.29 National Digital Communications Policy (NDCP) 2018, under its 'Connect India' mission, recognizes spectrum as a key natural resource for public benefit to achieve India's socio-economic goals. For making adequate spectrum available to be equipped for the new broadband era, one of the action plans under NDCP 2018 is to further liberalize the spectrum sharing, leasing and trading regime.

3.30 It is noted that some of the countries such as USA, Canada, Malaysia have permitted leasing of access spectrum to other TSPs. However, at present, leasing of access spectrum to other TSPs is not permitted in India.

3.31 Leasing of spectrum can create a conducive environment for secondary market for spectrum. It may promote efficient use of spectrum and may particularly be needed for short-term events. At the same time, it could have some potential adverse effects on competition and dynamics of auction of spectrum. Similar to the inter-band spectrum sharing, the possibility of misuse of leasing of spectrum cannot be ruled out considering that surrender of spectrum has been permitted (as discussed in para 3.14). Therefore, there may be a need to introduce some conditions so that there is no potential misuse of the provisions for leasing of spectrum.

3.32 Further, as spectrum trading is already permitted in India, it needs to be examined as to whether there is a real need for long-term spectrum leasing among TSPs. In case of spectrum trading, right to use of spectrum gets transferred to the transferee for the entire validity period, whereas in case of spectrum leasing, right to use of spectrum returns back to the original holder after the expiry of the period of lease or after termination of agreement. In case spectrum leasing is permitted, it needs to be examined as to whether certain charges for spectrum leasing need to be levied on the similar lines as applicable for spectrum trading, or a different approach needs to be adopted. Other associated terms and conditions such as lock-in period, roll-out obligations, spectrum cap, etc., also need to be examined.

3.33 In this background, the Authority solicits comments of stakeholders on the following questions:

Issues for Consultation:

Q19. Where there is a need to permit spectrum leasing among access service providers? Kindly justify your response.

Q20. In case it is decided to permit spectrum leasing among access service providers, please provide detailed response to the following questions:

(a) Whether spectrum leasing should be permitted for short-term period only, or for both short-term as well as long-term?

(b) In case only short-term leasing is to be permitted, what should be the maximum duration for such spectrum leasing? Should there be any restrictions on renewal of such short-term lease?

(c) In case it is decided to permit long term leasing, please provide your response to the following questions with justification:

(i) What measures should be put in place to avoid any adverse impact on competition and dynamics of spectrum auction?

(ii) Whether there should be a maximum duration for which spectrum leasing may be permitted?

(d) What should be the applicable roll-out obligations for the Lessee (the access service provider which takes spectrum through leasing arrangement from the Lessor)? Whether the spectrum leasing should have any effect on the roll-out obligations applicable for the Lessor (the access service provider which has leased out the spectrum)?

Whether the provisions for roll-out obligation require to be different for short-term and long-term spectrum leasing?

(e) Should the spectrum leasing charges be levied on similar lines as applicable for spectrum trading? If no, what charges should be made applicable in case of spectrum leasing?

(f) Should there be a lock-in period, after acquisition of spectrum, to become eligible for spectrum leasing as applicable in spectrum trading? If yes, what should be the lock-in period post which, spectrum holder would become eligible to lease it to another access service provider?

(g) Whether there is a need for an approval from, or intimation to DoT before the proposed leasing of spectrum? If yes, whether prior approval/ prior intimation requirement be different for long-term and short-term spectrum leasing? What should be the timelines for approval from, or intimation to DoT in each case?

(h) Whether the spectrum held by an access service provider on short-term, or long-term lease be included to calculate compliance to spectrum caps?

(i) Considering that surrender of spectrum has been permitted in the country, what provisions need to be created in the guidelines for leasing of spectrum between access service providers so that any possible misuse by the licensees could be avoided?

(j) What other terms and conditions need to be prescribed in respect of spectrum leasing between access service providers?

Q21. Any other issues/ suggestions relevant to the spectrum leasing, may be submitted with proper explanation and justification.

CHAPTER-4: ISSUES FOR CONSULTATION

Stakeholders are requested to provide responses to the following questions with detailed justifications:

A. Issues relating to Infrastructure sharing

Q1. Should passive infrastructure sharing be permitted across all telecommunication service licenses/ authorizations? Kindly justify your response.

Q2. Should other active infrastructure elements deployed by service providers under various licenses/ authorizations, which are not permitted to be shared at present, be permitted to be shared among licensees of telecommunication services?

Q3. If your response to the Q2 is in the negative, which active infrastructure elements should not be permitted to be shared? Further, which active infrastructure elements should be permitted to be shared with which licensees/ authorization holders? kindly provide details for each authorization with detailed justification.

Q4. In case it is decided to permit sharing of any additional active infrastructure elements among licensees,

- **(a) What precautionary conditions should be put in place to avoid disruption in telecommunication services due to any unforeseen situation? The response may be provided for each active infrastructure element.**
- **(b) Whether there is a need to have a provision for permission from/ intimation to the Licensor before commencement of such sharing? If yes, what provisions**

and timelines need to be prescribed for each active infrastructure element?

Q5. Whether any other amendment is required to be made in the telecommunication services licenses/ authorizations with respect to the provisions relating to both active and passive infrastructure sharing to bring clarity and remove anomaly? If yes, clause-wise suggestions in the telecommunication services licenses/ authorizations may kindly be made with detailed justification.

Q6. Should there be any obligation on telecom service providers to share infrastructure that has been funded, either partially or fully, by the Government through Universal Service Obligation (USO) Fund or otherwise, with other telecom service providers? Kindly justify your response.

Q7. In case it is decided to impose some obligations on telecom service providers to share the infrastructure funded by Government with other telecom service providers, is there a need to provide a broad framework for sharing of such infrastructure? If yes, kindly suggest the key aspects of such framework with detailed justification.

Q8. Any other suggestion to facilitate infrastructure sharing may kindly be made with proper explanation and justification.

B. <u>Connectivity Issues Faced by the Subscribers in Remote and Far-flung Areas of the Country</u>

Q9. What measures could be taken to encourage roaming arrangements among telecom service providers in remote and far-flung areas? What could be the associated regulatory concerns and what steps could be

taken to address such concerns? Kindly provide details on each of the suggested measures with justification.

Q10. What could be the other ways to ease out the hardship faced by the subscribers in remote and far-flung areas due to connectivity issues of the home network provider? Kindly provide detailed response with justification.

C. <u>Issues relating to inter-band spectrum sharing among access service providers</u>

Q11. Whether inter-band access spectrum sharing among the access service providers should be permitted in the country?

Q12. In case it is decided to permit inter-band access spectrum sharing among access service providers, please provide detailed inputs to the following questions:

(a) What measures should be put in place to avoid any potential adverse impact on competition and dynamics of spectrum auction? Kindly justify your response.

(b) Considering that surrender of spectrum has been permitted in the country, what provisions need to be included in the guidelines for inter-band access spectrum sharing so that any possible misuse by the licensees could be avoided? Kindly justify your response.

(c) What should be the broad framework for inter-band access spectrum sharing? Whether the procedure prescribed for intra-band access spectrum sharing could be made applicable to inter-band access spectrum sharing as well, or certain changes are required to be made?

(d) What should be the associated charges, and terms & conditions for inter-band access spectrum sharing?

Q13. Any other issues/ suggestions relevant to the spectrum sharing between access service providers, may be submitted with proper explanation and justification.

D. Issues relating to Authorised Shared Access (ASA) of Spectrum

Q14. Whether there is a need to explore putting in place a regime to implement Authorised Shared Access (ASA), wherein an access service provider as a secondary user could use the frequency spectrum assigned to a non-TSP primary user (government agencies and other entities) on a dynamic spectrum sharing basis? Kindly justify your response.

Q15. In case it is decided to implement ASA technique for secondary use of frequency spectrum assigned to non-TSP primary users, please provide your response to the following questions with detailed justification:

(a) What are the potential spectrum bands in which ASA implementation can be considered?

(b) What measures should be taken to encourage and motivate the incumbent users for participation in the spectrum sharing through ASA technique?

(c) What should be the broad framework for implementation of ASA technique?

(d) Is there a need for putting in place a mechanism for dispute handling including interference issues in case of ASA? If yes, what should be the framework?

(e) What methodology should be adopted for spectrum assignment to secondary users? What could be the spectrum charging mechanism for such assignment?

(f) Who should be entrusted the work of managing shared access of spectrum?

Q16. Whether there is a need to permit the ASA technique-based dynamic spectrum sharing among access service providers? If yes,

(a) What are the possible regulatory issues involved and what could be the possible solutions?

(b) What measures should be put in place to avoid any adverse impact on competition and dynamics of spectrum auction?

Kindly justify your response.

Q17. In case it is decided to permit ASA technique-based dynamic spectrum sharing among access service providers in the country, please provide your response to the following questions with justification:

(a) Whether there is a need for prescribing any framework for such shared use? If yes, what should be the framework?

(b) Whether access service providers should be required to obtain approval or intimate to DoT before entering into such arrangement?

(c) Whether any fee (one time, or recurring), should be prescribed on the spectrum sharing party(ies)? If yes, what should be the fee and who should be liable to pay such fee?

(d) What should be the treatment of spectrum shared through ASA technique for the purpose of computation of spectrum cap?

(e) Whether there is a need for an independent entity for managing spectrum access? If yes, who should be entrusted this work? If not, how should the spectrum access be managed?

(f) Is there a need for putting in place a mechanism for dispute handling including interference issues or should it be left to the access service providers? If yes, what should be the framework?

(g) What other terms and conditions should be applicable for the sharing parties?

Q18. Suggestions on any other spectrum sharing technique(s), which needs to be explored to be implemented in India, may kindly be made along with the relevant details and international practice. Details of likely regulatory issues with possible solutions, interference management, dispute handling etc. may also be provided.

E. Issues relating to Leasing of Spectrum

Q19. Where there is a need to permit spectrum leasing among access service providers? Kindly justify your response.

Q20. In case it is decided to permit spectrum leasing among access service providers, please provide detailed response to the following questions:

(a) Whether spectrum leasing should be permitted for short-term period only, or for both short-term as well as long-term?

(b) In case only short-term leasing is to be permitted, what should be the maximum duration for such spectrum leasing? Should there be any restrictions on renewal of such short-term lease?

(c) In case it is decided to permit long term leasing, please provide your response to the following questions with justification:

(i) What measures should be put in place to avoid any adverse impact on competition and dynamics of spectrum auction?

(ii) Whether there should be a maximum duration for which spectrum leasing may be permitted?

(d) What should be the applicable roll-out obligations for the Lessee (the access service provider which takes spectrum through leasing arrangement from the Lessor)? Whether the spectrum leasing should have any effect on the roll-out obligations applicable for the Lessor (the access service provider which has leased out the spectrum)? Whether the provisions for roll-out

obligation require to be different for short-term and long-term spectrum leasing?

(e) Should the spectrum leasing charges be levied on similar lines as applicable for spectrum trading? If no, what charges should be made applicable in case of spectrum leasing?

(f) Should there be a lock-in period, after acquisition of spectrum, to become eligible for spectrum leasing as applicable in spectrum trading? If yes, what should be the lock-in period post which, spectrum holder would become eligible to lease it to another access service provider?

(g) Whether there is a need for an approval from, or intimation to DoT before the proposed leasing of spectrum? If yes, whether prior approval/ prior intimation requirement be different for long-term and short-term spectrum leasing? What should be the timelines for approval from, or intimation to DoT in each case?

(h) Whether the spectrum held by an access service provider on short-term, or long-term lease be included to calculate compliance to spectrum caps?

(i) Considering that surrender of spectrum has been permitted in the country, what provisions need to be created in the guidelines for leasing of spectrum between access service providers so that any possible misuse by the licensees could be avoided?

(j) What other terms and conditions need to be prescribed in respect of spectrum leasing between access service providers?

Q21. Any other issues/ suggestions relevant to the spectrum leasing, may be submitted with proper explanation and justification.

Annexure-1.1: DoT reference dated 7th December 2021

F. No. 20-405/2013 AS-I
Ministry of Communications
Department of Telecommunications
(Access Service Wing)
20, Ashoka Road, Sanchar Bhawan, New Delhi
Dated the 07th December, 2021

Subject: COAI reference on "Facilitating the Infrastructure Sharing between the Telecom Operators- seeking recommendations of TRAI- reg

The Department of Telecommunications has received request from Cellular Operator Association of India (COAI) for allowing sharing of core network elements also such as Mobile Switching Centre (MSC), Home Location Register (HLR), Intelligent Network (IN), etc., among telecom operators. The copy of COAI reference is enclosed.

2. At present, as per the provisions contained in Unified License, the sharing of active infrastructure is limited to antenna, feeder cable, Node B, Radio Access Network (RAN) and transmission system only. The relevant condition of Unified License Agreement is reproduced as under:

"33. Sharing of infrastructure:

33.1 Sharing of active/passive infrastructure shall be governed by the terms and conditions of respective service authorization and amendment/guidelines to be issued by the Licensor from time to time.

33.2 Sharing of Active infrastructure amongst Service Providers based on the mutual agreements entered amongst them is permitted. Active infrastructure sharing will be limited to antenna, feeder cable, Node B, Radio Access Network (RAN) and transmission system only. Sharing of infrastructure related to Wi-Fi equipment such as Wi-Fi router, Access Point etc. is allowed. Sharing of backhaul is also permitted.

33.3 The Licensee may share its own active and passive infrastructure for providing other services authorized to it under any other telecom license issued by Licensor.

33.4 An authorized Gateway hub operated by the satellite provider itself is permitted to be shared with the satellite bandwidth seeker."

3. In view of above, TRAI is requested to submit its recommendations under Section 11 (1) (a) of TRAI Act, 1997 (as amended) on allowing sharing of core network elements also such as MSC, HLR, IN etc., among telecom operators.

Encl.: As above.

7/12/2021
(S.B. Singh)
Deputy Director General (AS)
Phone: 23036918

To

The Secretary
Telecom Regulatory Authority of India,
Mahanagar Doorsanchar Bhawan,
Jawaharlal Nehru Marg (Old Minto Road)
New Delhi – 110002.

COAI

DG/COAI/2021/371
November 29, 2021

Sh. K. Rajaraman, IAS,
Secretary,
Department of Telecommunications,
Sanchar Bhawan, 20 Ashoka Road,
New Delhi 110 001

Subject: Facilitating the Infrastructure Sharing between the Telecom Operators

Reference: 1. COAI letter no. SPK/COAI/2020/310 dated 12th Nov 2020 (Copy enclosed)
2. COAI letter no. DG/COAI/2021/038 dated 26th Feb 2021 (Copy enclosed)
3. COAI letter no. DG/COAI/2021/139 dated 19th May 2021 (Copy enclosed)

Dear Sir,

This is with reference to our above cited letters vide which we had requested your good office to allow infrastructure sharing between telecom operators. In this regard, we wish to humbly reiterate the following:

a. Telecom being capital intensive needs huge investments for growth and expansion of service. Therefore it is important for TSPs to have a model which enables them to share infrastructure i.e. Passive, Active and Core, to reduce CAPEX, OPEX and maximise network capacity and capabilities.

b. As per BEREC[1] there can be a cost saving of 16%-35% in passive Infrastructure sharing in both CAPEX and OPEX, while for **Active Infrastructure sharing, the cost savings can be as much as 45%.**

c. In addition to the cost savings, sharing the active Infrastructure will provide the following benefits:

   i. Avoid duplication of investment by the TSPs
   ii. Improved Quality of Service
   iii. Positive incentives to provide services in underserved areas
   iv. Attract Investments from the entities providing Infrastructure Funds

[1] https://berec.europa.eu/eng/document_register/subject_matter/berec/download/0/8164-berec-report-on-infrastructure-sharing_0.pdf

14, Bhai Veer Singh Marg, New Delhi – 110 001
tel: +91-11-23349275 fax: +91-11-23349276 email: contact@coai.in website: www.coai.in

COAI

v. Help TSPs to concentrate on their Core Business /Competency
vi. Accelerate roll out of digital services

d. Moreover, currently active Infrastructure sharing is allowed to TSPs for only antenna, feeder cable, Node B and transmission systems.

e. The policy on infrastructure sharing should be further liberalized to allow sharing of core infrastructure such as MSC, HLR, IN etc. among licensees having UL (Access Authorization).

f. Sharing of core network elements such as MSC, HLR, IN etc. among the TSPs will reduce cost for the TSPs and facilitate faster rollout.

g. **Considering the above, we humbly request DoT to allow sharing of core network elements, such as such as MSC, HLR, IN etc. between the Telecom operators.**

We request for your kind consideration and support on this issue.

Thanking you,

Yours faithfully,

Lt. Gen. Dr. S. P. Kochhar
Director General

Cc: 1. Sh. Hari Ranjan Rao, Jt. Secy. (Telecom), DoT, Sanchar Bhawan, New Delhi
2. Sh. S.B. Singh, DDG (AS), DoT, Sanchar Bhawan, New Delhi
3. Sh. R.K. Sahu, Director (Policy), DoT, Sanchar Bhawan, New Delhi

Annexure-1.2: DoT reference dated 10th February 2022

F. No. 20-405/2013 AS-I
Ministry of Communications
Department of Telecommunications
(Access Service Wing)
20, Ashoka Road, Sanchar Bhawan, New Delhi

Dated the 10th February, 2022

Subject: Facilitating the Infrastructure Sharing amongst the Telecom Operators- seeking recommendations of TRAI- reg

This has reference to this office letter of even number dated 07.12.2021 (copy enclosed) wherein, the Department of Telecommunications requested TRAI to submit its recommendations under Section 11 (1) (a) of TRAI Act, 1997 (as amended) on allowing sharing of core network elements also such as MSC, HLR, IN etc., among telecom operators.

2. In order to promote optimum resource utilization among the licensees, it is proposed to allow sharing of all kinds of telecom infrastructure and network elements among all categories of service providers, licensed under the Section 4 of Indian Telegraph, Act, 1885, for provision of authorized telecom services.

3. Therefore, TRAI is requested to submit its recommendations under Section 11 (1) (a) of TRAI Act, 1997 (as amended) on this issue.

Encl.: As above.

10/2/2022

(S.B. Singh)
Deputy Director General (AS)
Phone: 23036918

To

The Secretary
Telecom Regulatory Authority of India,
Mahanagar Doorsanchar Bhawan,
Jawaharlal Nehru Marg (Old Minto Road)
New Delhi – 110002.

Annexure-2.1: DoT Guidelines on 'Infrastructure sharing among the Service Providers and Infrastructure Providers'

No. 6/21/2007-Policy-I
Government of India
Ministry of Communications and IT
Department of Telecommunications
20, Ashoka Road, Sanchar Bhawan, New Delhi

Dated: April 2008

Subject: **Guidelines on Infrastructure Sharing among the Service Providers and Infrastructure Providers.**

Availability of affordable and effective communications for the citizens is at the core of the vision and goal of the National Telecom Policy 1999. The proactive policies of the Department of Telecommunications (DoT) have resulted in exponential growth of telecom services. DoT has been able to provide state of the art world class infrastructure, at globally competitive tariffs and reduce the digital divide by expanding connectivity to the unconnected areas.

2. For maintaining the unprecedented growth in the telecom sector, there is a need for creation of huge infrastructure which require significant investment. DoT is of the view that there should be an optimum utilization of the available resources by way of sharing of infrastructure among the Service Providers and Infrastructure Providers. This would not only bring down the cost of providing the service but also would help in preventing the deterioration of the skyline.

3. In order to facilitate sharing of infrastructure among the Service Providers and Infrastructure Providers, the Department has formulated **"Guidelines on Infrastructure Sharing among the Service Providers and Infrastructure Providers"**, a copy of which is enclosed. These guidelines are also available on the DoT website, www.dot.gov.in.

(Sudhir K. Saxena)
Director (T)
Ph: 23372575

To

All Service Providers (As per list enclosed)

Guidelines on Infrastructure Sharing

In order to reduce input cost of Telecom access Service Providers, thereby facilitating reduction in tariff further, and to enhance the teledensity including rural areas, the Department of Telecom has formulated the following guidelines on infrastructure sharing among the Service Providers and Infrastructure Providers:-

i. Sharing of active infrastructure amongst Service Providers based on the mutual agreements entered amongst them is permitted. Active infrastructure sharing will be limited to antenna, feeder cable, Node B, Radio Access Network (RAN) and transmission system only. Sharing of the allocated spectrum will not be permitted. The licensing conditions of UASL/CMSP will be suitably amended wherever necessary to permit such sharing.

ii. Infrastructure Providers (IP) Category-I are allowed to seek SACFA siting clearance for erecting towers with or without agreement with licensed Service Providers.

iii. SACFA procedure is being further simplified to reduce the time for SACFA clearance to about 45 days. Sites located beyond 7 Kms from Airport Reference Point (ARP) and the antenna height not exceeding 40 meters from airport level need only to be "registered" on WPC Website and clearance to be issued accordingly.

iv. Service Providers may share passive infrastructure in accordance with the existing provisions in the licences of BSOs, CMSPs and UASLs.

v. For giving financial incentives on the infrastructure sharing in the urban areas, State Governments shall be requested to charge same amounts for setting up of the shared tower irrespective of the number of Service Providers sharing the same tower at par with unshared tower.

vi. For giving financial incentives for infrastructure sharing in rural areas, all the eligible Service Providers/ Infrastructure Providers (IP)Category-I shall be permitted to participate in the forthcoming scheme of USOF on infrastructure sharing irrespective of the fact they were beneficiary in the first phase of the scheme of infrastructure sharing within that particular area.

vii. The IP shall set up Ground Base Tower (GBT) of minimum 40 m height with design duly approved by TEC/ SERC/ IITs. Such tower shall be capable of catering to the requirement of minimum three Service Providers sharing the

infrastructure for provision of mobile services. However, the number of Service Providers sharing this tower may vary depending upon the proposal submitted by Infrastructure Provider at the time of registration with USOFA.

viii. The IP will have to set up the infrastructure site within one year from the date of signing of the Agreement with Administrator USOF. No subsidy shall be payable to the IP if such infrastructure is set up after expiry of the LD period.

ix. The subsidy payable to the IPs for the Second Phase of the USOF scheme on infrastructure sharing shall be based on the Representative Rate emerged as an outcome of the bidding process for Part-A of the First Phase of the Scheme. However, the same shall be moderated taking into account the changes in some of the economic parameters, which have since undergone a change. If the number of Service Providers in the second phase of the scheme, irrespective of the fact that they were beneficiary or not in the first phase of the scheme, is less than the number of Service Providers proposed at the time of registration, then amount of subsidy payable from USO Fund to the IP shall be proportionally reduced from the amount when tower would be shared between the proposed number of Service Providers.

x. To encourage concept of infrastructure sharing in rural and remote areas, no subsidy shall be paid if newly erected tower is not shared.

xi. In the second phase of the scheme of USOF , an IP with two or more Service Providers (irrespective of the fact that they were beneficiary or not in the first phase of the scheme) or a group of two or more Service Providers, could come together and register themselves with USOFA for setting up the tower and providing mobiles services along with the consent of the three USPs to share the towers. All Licensed Access Service Providers (BSOs/ CMSPs/ UASLs) having spectrum allocated from WPC and all Infrastructure Providers Category-I (IP-I) registered with DoT shall be eligible to set up the infrastructure sites under the second phase of the Scheme, irrespective of the fact that they were beneficiary in the first phase or not.

xii. For using non-conventional energy sources, the Service Providers may avail several fiscal and financial incentives under the various schemes/programmes of the Ministry of New and Renewable Energy, details of which are available on the ministry's website: **www.mnes.nic.in**

Annexure-2.2: License Amendment permitting sharing of active infrastructure among service providers

Government of India
Ministry of Communication & IT
Department of Telecommunications
(Access Services Division)
1203, Sanchar Bhawan, Ashok Road, New Delhi-110001.

No.20-443/2014-AS-I Pt **Dated: 11th February, 2016**

To,

All Unified License (Access Service) Licensees

Subject:- Amendment in Unified License (Access Service) Agreement.

1. In pursuance of the clause 5.1 of Unified License (Access Service) Agreement, The LICENSOR hereby amends the Unified Licence (Access Service) Agreement and the clause 33 (VI) in Part-V is appended as below:

"Sharing of Active infrastructure amongst Service Providers based on the mutual agreements entered amongst them is permitted. Active infrastructure sharing will be limited to antenna, feeder cable, Node B, Radio Access Network (RAN) and transmission system only."

2. This amendment shall form part and parcel of the UL (AS) Agreement and all other terms & conditions shall remain unchanged.

3. The amendment is effective with immediate effect

11/2/16
(R.K.SONI)
Director (AS-I)
Ph.No.23036284.

Copy to,

1. **Secretary, TRAI, New Delhi.**
2. **WA, DoT, New Delhi.**
3. **Sr DDG (TERM)/DDG (WPF), DoT, Delhi.**
4. **DDG (A/C)/(LFA)/(LFP), DoT, Delhi.**
5. **Director (AS-II), Director (AS-III), Director (AS-IV), Director (AS-V) for kind information please.**
6. **Director (IT) for uploading on website.**

Annexure-2.3: DoT Advisory dated 18th November 2019 for sharing of in-building infrastructure

No.20-545/2017 AS-I
Government of India
Ministry of Communications
Department of Telecommunications
Sanchar Bhawan, 20-Ashoka Road, New Delhi–110001

Dated 18th November, 2019

To

All Telecom Service Licensees.

Subject: Advisory for sharing of In-Building Infrastructure.

With reference to the TRAI's recommendations dated 20th January 2017 on "In-Building Access by Telecom Service Providers" and response dated 9th March 2018 to the back-reference from DoT, all the TSPs are advised to share the In-Building Infrastructure (IBS, OFC & other cables, ducts, etc.) with other TSPs, in all the existing Government/ public buildings/ places like Airports, Railway Stations, Bus Terminals, Metro Stations/ Lines, hospitals, etc., as per the terms and conditions of their respective licenses.

18/11/19

(Prashant Verma)
ADG (AS-1)
Tele: 2303 6580

Copy To:

1. Secretary (TRAI).
2. DDG (P&N), DGT-HQ / DDG (CS) / DDG (DS).
3. Director (IT) may kindly arrange to upload this letter on the website of DoT.
4. All Directors of AS Division.

Annexure-2.4: License Amendment dated 6th April 2021 permitting sharing of infrastructure related to Wi-Fi equipment such as Wi-Fi router, Access point, and backhaul

Government of India
Ministry of Communications
Department of Telecom
Sanchar Bhavan, 20, Ashoka Road, New Delhi - 110001
(Access Services Cell)

No. 20-271/2010 AS-I (Vol.-III) Dated: 06.04.2021

To

All Unified License Licensees

Subject: Amendment in Unified License relating to infrastructure sharing and Public Wi-Fi services.

In pursuance of Condition No. 5.1 of the Unified License, LICENSOR hereby amends the following conditions in the said License Agreements.

Existing Condition	Amended Condition
PART-I CHAPTER-V OPERATING CONDITIONS 33.2 Sharing of Active infrastructure amongst Service Providers based on the mutual agreements entered amongst them is permitted. Active infrastructure sharing will be limited to antenna, feeder cable, Node B, Radio Access Network (RAN) and transmission system only.	PART-I CHAPTER-V OPERATING CONDITIONS 33.2 Sharing of Active infrastructure amongst Service Providers based on the mutual agreements entered amongst them is permitted. Active infrastructure sharing will be limited to antenna, feeder cable, Node B, Radio Access Network (RAN) and transmission system only. ***Sharing of infrastructure related to Wi-Fi equipment such as Wi-Fi router, Access Point etc. is allowed. Sharing of backhaul is also permitted.***
PART-II Chapter-VIII Access Service 2.1(a)(ii) Licensee may enter into mutual commercial agreements for roaming facilities (within same service area or other service areas) with other Cellular Mobile Telephone Service Licensees/ Unified Access Service LICENSEEs/Unified License (Access Services) LICENSEEs /Unified Licensees with Access Service authorization, unless otherwise directed by Licensor, irrespective of spectrum band held or technology deployed by such licensees. However, any Roaming arrangement shall not entitle the	PART-II Chapter-VIII Access Service 2.1(a)(ii) Licensee may enter into mutual commercial agreements for roaming facilities (within same service area or other service areas) with other Cellular Mobile Telephone Service Licensees/ Unified Access Service LICENSEEs/Unified License (Access Services) LICENSEEs /Unified Licensees with Access Service authorization, unless otherwise directed by Licensor, irrespective of spectrum band held or technology deployed by such licensees. ***Licensee may also enter into mutual commercial agreements for roaming facilities (within same service area or other service areas) with Unified Licensees having Category 'A', Category 'B' and Category 'C' Internet Service Provider (ISP) authorizations/ Category 'A', Category 'B' and Category 'C' Internet Service Providers, for***

Licensee to acquire customer in the spectrum band not held or technology not deployed or for services/facilities not offered by the Licensee in its network.	*providing Internet Access Services only.* However, any Roaming arrangement shall not entitle the Licensee to acquire customer in the spectrum band not held or technology not deployed or for services/facilities not offered by the Licensee in its network.
PART-II **Chapter-IX Internet Service** 2.1(i)The Licensee may provide Internet access including IPTV. The subscriber shall have unrestricted access to all the content available on Internet except for such content which is restricted by the Licensor/designated authority under Law. The Licensee shall not offer VPN/Closed User Group services to its subscribers. The content for IPTV shall be regulated as per law in force from time to time.	**PART-II** **Chapter-IX Internet Service** 2.1(i)The Licensee may provide Internet access including IPTV. The subscriber shall have unrestricted access to all the content available on Internet except for such content which is restricted by the Licensor/designated authority under Law. The Licensee shall not offer VPN/Closed User Group services to its subscribers. The content for IPTV shall be regulated as per law in force from time to time. ***Licensee may enter into mutual commercial agreements for roaming facilities (within same service area or other service areas) with other Cellular Mobile Telephone Service Licensees/ Unified Access Service LICENSEEs/Unified Licensees with Access Service authorization/ Unified Licensees having Category 'A', Category 'B' and Category 'C' Internet Service Provider (ISP) authorizations/ Category 'A', Category 'B' and Category 'C' Internet Service Provider(ISP) Licensees, for providing Internet Access Services only. However, any Roaming arrangement shall not entitle the Licensee to acquire customer in the spectrum band not held or technology not deployed or for services/facilities not offered by the Licensee in its network.***

2. This amendment shall be part and parcel of Unified License Agreements. All other terms and conditions shall remain unchanged.

3. The amendments shall be effective with immediate effect.

(A.K.Gehlot)
Director (AS-I)
Tel No.: 23036284

Copy To:

(1) Secretary, TRAI
(2) Advisor(Economics)/ Wireless Advisor
(3) Sr DDG (TEC)/ DGT, DOT(HQ)
(4) DDG(AS)/ DDG(CS)/ DDG(DS)/ DDG (LFP) /DDG(LFA)/ DDG(Security) /DDG (WPF)/ DDG(A/C)
(5) All Director of AS /DS cell
(6) Director (IT) may kindly arrange to upload this letter on the website of DoT.

Annexure-2.5: TRAI letter dated 01.02.2022

भारतीय दूरसंचार विनियामक प्राधिकरण
TELECOM REGULATORY AUTHORITY OF INDIA
भारत सरकार /Government of India

TRAI

File No. M-7/1/6(4)/2022-BBPA

Date :1st February, 2022

To

Shri K. Rajaraman,
Secretary,
Department of Telecommunications,
Ministry of Communications
Sanchar Bhawan,
20, Ashoka Road, New Delhi - 110001

Subject: Streamlining the guidelines of Passive and Active Infra Sharing as per Authority's Recommendations-Regarding

This is regarding issue of Active and Passive sharing as authorized under various Access and Internet Service provision Licenses and Authorization. The provisions allowing active and passive infrastructure sharing in the different licenses/authorizations that were issued at different points in time vary, thus dissuading infrastructure sharing and creating issues of level playing field.

2. About Sharing of passive and Active Infrastructure, Authority in its recent recommendations of August 2021 titled "Recommendations on Roadmap to Promote Broadband Connectivity and Enhanced Broadband Speed" vide Para 3.47 said that similar to the Access Service authorization, passive as well as active infrastructure sharing should be allowed under the Internet Service License, and Internet Service authorization under the Unified License (UL) and UL(VNO) licenses." A similar recommendation was made in the context of "Proliferation of Broadband through public Wi-Fi networks" dated 9th March 2017.

3. It may be noted that UL and UL-VNO License agreement, each has two parts. Part-I has seven chapters and specify conditions that are applicable to all Licensees irrespective of the Authorizations. Part-II has different chapters dedicated to each of the Authorizations like Access Service, ISP, NLD, ILD etc and have specific clauses that are applicable to that particular Authorization over and above the general conditions

Contd/-

महानगर दूरसंचार भवन, जवाहर लाल नेहरू मार्ग, Mahanagar Doorsanchar Bhawan, Jawahar Lal Nehru Marg
(पुराना मिन्टो रोड), नई दिल्ली/(Old Minto Road), New Delhi-110002
फैक्स/Fax : +91-11-23213294, ईपीबीएक्स नं0/EPBX No. : +91-11-23664145

150 YEARS OF CELEBRATING THE MAHATMA

mentioned in Part-I. Presently different clauses for Active/Passive Infra Sharing under Common Conditions (PART-I) and Specific Service Conditions (PART-II) in different authorizations/Licenses are mentioned (compiled as **Annexure-I).** Plain reading of these conditions can be confusing on following grounds :

a) The Conditions mentioned in Part-I are in conflict with conditions mentioned in Part-II. For example, Clause 33.1 of UL License mentions *"Sharing of active/passive infrastructure shall be governed by the terms and conditions of respective service authorization and amendment/guidelines to be issued by the Licensor from time to time."* However, under ISP Authorization chapter there is no mention of any Active Infrastructure sharing.

b) The conditions mentioned for Access and ISP authorization are not similar.

4. In addition, in the Case of ISP licenses issued under 2002 and 2007 guidelines, there is no clarity about passive Infra sharing or sharing of active infrastructure like antenna, feeder cable, and transmission systems.

5. Authority thus feels that terms of Active/Passive Infrastructure Sharing should be similar in all Licenses/authorizations, to the extent possible. The scope of provisions in common conditions (Part-I of UL and UL-VNO) and specific service conditions (Part-II of UL and UL-VNO) should be clearly mentioned as to whether the clauses in part-II are "additional clauses" or "having overriding effect". DoT may accordingly issue clarification/amendment to license conditions so that sharing of active/passive Infra can be further facilitated.

Encl: As above

RAGHUNANDAN
VARTHAKAVI

(V. Raghunandan)
Secretary, TRAI

	Unified License			Unified License (VNO)			ISP 2002	ISP 2007
	Provision under common conditions	**Provision under Access service authorization under UL**	**Provision under ISP Service authorization under UL**	**Provision under common conditions**	**Provision under Access authorization under UL**	**Provision under ISP authorization under UL**		
Passive Sharing		4.2(i) Sharing of "passive" infrastructure viz., building, tower, dark fiber, duct space, Right of Way etc. with other Licensees.	2.1(xi)The Licensee may share "passive" infrastructure namely building, tower, dark fiber, duct space, Right of Way owned, established and operated by it under the scope of this Authorization with other Licensees.	32.1 The terms and conditions of sharing of infrastructure between the NSO(s) and VNO shall be left to the market i.e. on the basis of mutually accepted terms and conditions between the NSO(s) and the VNO.	4.2(i) Sharing of "passive" infrastructure viz., building, tower, dark fiber, duct space, Right of Way etc. with other Licensees.	2.1 (vii) The Licensee may share "passive" infrastructure namely building, tower, dark fiber, duct space, Right of Way owned, established and operated by it under the scope of this Authorization with other VNO Licensees.		
Active Sharing	33.1 Sharing of active/passive infrastructure shall be governed by the terms and conditions of respective service authorization and amendment/guidelines to be issued by the Licensor from time to time.	4.2 The sharing of infrastructure, owned, established and operated by the Licensee under the scope of this Authorization, is permitted as below: (ii) Provision of point to point bandwidth from their own infrastructure within their Service Area to other licensed telecom service providers for their own use. However, the Licensee hiring the bandwidth shall not resell such bandwidth.		32.1 The terms and conditions of sharing of infrastructure between the NSO(s) and VNO shall be left to the market i.e. on the basis of mutually accepted terms and conditions between the NSO(s) and the VNO.	4.2 The sharing of infrastructure, owned, established and operated by the Licensee under the scope of this Authorization, is permitted as below: (ii) Provision of point to point bandwidth from their own infrastructure within their Service Area to other licensed telecom service providers for their own use. However, the Licensee hiring the bandwidth shall not resell such bandwidth.		Sharing of Active infrastructure amongst Service Providers based on mutual agreements entered amongst them is permitted. Active infrastructure sharing will be limited to WiFi equipment such as Wi-Fi router, Access Point etc. (Inserted in Guideline on 31.03.2021)	Sharing of Active infrastructure amongst Service Providers based on mutual agreements entered amongst them is permitted. Active infrastructure sharing will be limited to WiFi equipment such as Wi-Fi router, Access Point etc. (Inserted in Guideline on 31.03.2021)
	3.2 Sharing of Active infrastructure amongst Service Providers based on the mutual agreements entered amongst them is permitted. Active infrastructure sharing will	4.3 Further, the Licensee may share its own active and passive infrastructure		32.2 Sharing of Active infrastructure amongst Service Providers based on the mutual agreements entered amongst them is permitted. Active	4.3 Further, the Licensee may share its own active and passive infrastructure for providing other services authorized to it under the license.			

	be limited to antenna, feeder cable, Node B, Radio Access Network (RAN) and transmission system only. (Amended vide DoT's letter no. 20-443/2014 AS-I Pt. dated 11.02.2016)	for providing other services authorized to it under the license.		infrastructure sharing will be limited to antenna, feeder cable, Node B, Radio Access Network (RAN) and transmission system only.				
	Sharing of infrastructure related to Wi-Fi equipment such as Wi-Fi router, Access Point etc. is allowed. Sharing of backhaul is also permitted. (Amended vide DoT's letter no. 20-271/2010 AS-I (Vol.-III) dated 06.04.2021)	4.4 Moreover, sharing of active infrastructure with other licensees shall be governed by the license conditions/amendments issued by the Licensor from time to time.		33.3 The Licensee may share its own active and passive infrastructure for providing other services authorized to it under any other telecom license issued by Licensor. (Amended vide letter no. 20-271/2010 AS-I (Vol.-III) dated 23.09.2021 & 27.09.2021)	4.4 Moreover, sharing of active infrastructure with other licensees shall be governed by the license conditions/amendments issued by the Licensor from time to time.			
	33.3 The Licensee may share its own active and passive infrastructure for providing other services authorized to it under any other telecom license issued by Licensor. (Amended vide letter no. 20-271/2010 AS-I (Vol.-III) dated 23.09.2021 & 27.09.2021)	2.1(x) Spectrum sharing and trading would be permitted as per guidelines issued by the Government from time to time. (Amended vide DoT letter no 20-271/2010 AS-I dated 03.12.2015)		33.4 An authorized Gateway hub operated by the satellite provider itself is permitted to be shared with the satellite bandwidth seeker. (Amended vide letter no. 20-271/2010 AS-I (Vol.-III) dated 23.09.2021 & 27.09.2021)				
	33.4 An authorized Gateway hub operated by the satellite provider itself is permitted to be shared with the satellite bandwidth seeker. (Amended vide letter no. 20- 271/2010 AS-I (Vol.-III) dated 23.09.2021 & 27.09.2021)							

Annexure-3.1: DoT Guidelines on sharing of spectrum

No. L-14006//04/2015-NTG
Government of India
Ministry of Communications
Department of Telecommunications
WPC Wing, 6th floor, Sanchar Bhawan, New Delhi

Dated: the 11th October, 2021

Subject: **Guidelines for Sharing of Access Spectrum by Access Service Providers**

In supersession of the Guidelines for Sharing of Access Spectrum by Access Service Providers dated 24th September 2015, fresh guidelines for Sharing of Access Spectrum by Access Service Providers are as follows:

(1). Spectrum sharing shall be allowed only for the access service providers holding Unified Access Service License (UASL) /Unified License (Access Services)(UL(AS))/Unified License (UL) with authorization of Access Service in a Licensed Service Area (LSA), where both the licensees are having spectrum in the same band.

(2). Spectrum sharing is permitted between two Telecom Service Providers utilizing the spectrum in the same band.

(3). Spectrum sharing is not permitted when both the licensees are having spectrum in different bands. Leasing of spectrum is not permitted.

(4). All access spectrum including traded spectrum shall be sharable provided that both the licensees are having spectrum in the same band. Further, if more bands such as 700 MHz etc. are added for allocation of spectrum to Access service Providers through auction process, the sharing of spectrum shall also be permitted in that band.

(5). The right to share the spectrum shall be subject to the fulfilment of the relevant license conditions and any other conditions that may be specified by the licensor/Government from time to time.

(6). Both the licensees shall ensure that they fulfil the specified roll-out obligations and specified QoS norms.

(7). A licensee shall not be eligible to share its spectrum if it has been established that it is in breach of terms and conditions of the licence and the licensor has ordered for revocation/termination of its licence.

(8). Sharing is permitted in the following scenarios:

(i). For the spectrum where both the Licensees who plan to share, possess the spectrum for which market price has been paid. Further, in respect of spectrum in 800 MHz acquired in the auction held in March 2013, sharing of spectrum shall be permitted only if the differential of the latest auction price and the March 2013 auction price on pro-rata basis on the balance period of right to use the spectrum is paid.

(ii). In case both the Licensees who plan to share spectrum are having the administratively allotted spectrum in that band, the sharing of spectrum is permitted only when both the licensees have paid One time Spectrum Charges (OTSC) for their respective spectrum holdings, above 4.4 MHz (GSM) / 2.5 MHz (CDMA) based on reserve price/auction determined price. However if the said amount is not paid due to judicial intervention in judicial forums barring any coercive action, in the interim, sharing of spectrum in such cases will also be permitted subject to submission of a bank guarantee for an amount equal to the demand raised by the department for one time spectrum charge pending final outcome of the court case.

(iii). In case of proposed sharing where one Licensee has spectrum acquired through auction/trading or liberalized spectrum and the other has spectrum allotted administratively, sharing is permitted only after the spectrum charges for liberalizing the administratively allocated spectrum are paid. Further, in case of spectrum acquired in auction held in March 2013, differential amount as indicated in para 8(i) above shall be payable in respect of 800 MHz band.

(9). The use of technology shall be governed by the terms and conditions of respective Notice Inviting Application (NIA)/license.

(10). Both the licensees will be individually and collectively responsible for complying with the sharing guidelines, including interference norms.

(11). Spectrum sharing will be restricted to sharing by only two licensees subject to the condition that there will be at least two independent networks provided in the same band.

(12). Spectrum sharing shall not attract any increase in rate of Spectrum Usage Charge (SUC), w.e.f. 01.10.2021.

(13). The prescribed limits for spectrum cap shall be applicable for both the licensees individually. Further, the spectrum holding of any licensee post-sharing shall be counted after adding 50% of the spectrum held by the other licensee in the band being shared being added as the additional spectrum to the original spectrum held by the licensee in the band.

(14). Spectrum sharing shall be available for upto the balance period of the licence or upto the period of right to use spectrum, whichever is earlier.

(15). Both the licensees sharing the spectrum shall jointly give a prior intimation for sharing the right to use the spectrum at least 45 days before the proposed effective date of the sharing. Application format is attached along with these guidelines as Annexure-I.

(16). Both the licensees shall also give an undertaking that they are in compliance with all the ferms and conditions of guidelines for spectrum sharing and the licence conditions and will agree that in the event, it is established at any stage in future that either of the licensee was not in conformance with the terms and conditions of the guidelines for spectrum sharing or/and of the licence at the time of giving intimation for sharing of right to use the spectrum, the Government will have the right to take appropriate action which inter-alia may include annulment of sharing arrangement.

(17). A non refundable processing fee, as prescribed from time to time, shall be payable individually by each licensee for each service area at the time of intimation to WPC Wing. At present, processing fee of Rs. 50,000/- is to be paid.

The payment is to be made through Bharatkosh/by draft in favour of Pay & Account Officer (HQ), DOT payable at New Delhi.

(18). Licensor/Government reserves the right to modify the guidelines from time to time as it may deem fit.

11.10.2021

(Neeraj Juyal)
Assistant Wireless Adviser
for and on behalf of President of India

Annexure-I

(On Company Letter head)

To,

Wireless Adviser to the Government of India
WPC Wing, Department of Telecommunications
Ministry of Communications
Sanchar Bhawan
20, Ashok Road, New Delhi – 110001

Subject: - Intimation for Sharing of Spectrum

With reference to guidelines for sharing of spectrum issued vide L-14006/04/2015-NTG dated 11.10.2021, we wish to share the spectrum as per details given below:

S. No.	Item	Status
1.	Name of the Licensee1	
2.	License No. of the Licensee1 and date of expiry of license	
3.	Name of the Licensee 2	
4.	License No. of the Licensee 2 and date of expiry of license	
5.	Name of Licensed Service Area where spectrum sharing is proposed	
6.	Band of the spectrum for Sharing and frequency spots to be shared	(i) Licensee 1 (ii) Licensee 2
7.	Total spectrum available with Licensee 1 in the LSA (band wise)	
8.	Total spectrum available with Licensee 2 in the LSA (band wise)	
9.	Amount of administrative allotted spectrum with the Licensee 1, if any, along with date of expiry of right to use of spectrum	
10.	Amount of administrative allotted spectrum with the Licensee 2, if any, along	

	with date of expiry of right to use of spectrum	
11.	Amount of spectrum obtained by Licensee 1 through auction year wise along with date of expiry of right to use of spectrum	
12.	Amount of spectrum obtained by Licensee 2 through auction year wise along with date of expiry of right to use of spectrum	
13.	Effective date of Sharing	
14.	Period of Sharing (Years/Months)	
15.	Date of expiry of shared spectrum by Licensee1	
16.	Date of expiry of shared spectrum by Licensee2	
17.	Details of payment of processing fee for spectrum sharing (Bharatkosh Challan/ Demand draft to be enclosed)	
18.	Any other relevant information	

It is certified that:

(i). Both the licensees fulfil all the eligibility conditions for sharing the spectrum.

(ii). In case any interference is arising due to sharing of their spectrum, Licensees will resolved within 30 days failing which they will stop sharing in the affected areas till the problem of interference is addressed.

(iii). Both the licensees fulfil the conditions mentioned in the Spectrum Sharing Guidelines issued vide OM No. L-14006/04/2015-NTG dated 11.10.2021.

(Authorized Signatory)

Copy of Board Resolution/POA to be attached

Annexure-3.2: DoT Guidelines on Leasing of spectrum for Private Networks (CNPN)

Government of India
Ministry of Communications
Department of Telecommunications
Sanchar Bhawan, 20 Ashoka Road, New Delhi-110001.

No. 20-1333/2022-AS-I **Dated 27th June, 2022**

Sub: Guidelines for Captive Non-Public Network (CNPN) License

1. Background:

(1) National Digital Communications Policy, 2018 aims to ensure a holistic approach towards emerging digital technologies such as Artificial Intelligence, Robotics, Internet of Things, Mobile Edge Computing (MEC), Machine to Machine (M2M) communication etc. to catalyse the fourth industrial revolution (Industry 4.0).

(2) Private Captive Networks can play a key role in automation and industry 4.0 by providing secure, ultra-reliable, low latency and high throughput communication using advanced technologies.

(3) TRAI in its recommendations on "Auction of Spectrum in frequency bands identified for IMT/5G" dated 11.04.2022 had recommended four options for setting up of Captive Wireless Private Network *(hereinafter referred to as "Captive Non-Public Network (CNPN)")* in India.

2. Setting up Captive Non-Public Networks: After considering the TRAI recommendations, the Government has decided to enable setting up of Captive Non-Public Networks in India as follows:

(1) Telecom Service Providers (TSPs) with Access Service License may provide private networks as a service to an enterprise by using network resources (such as through network slicing) over its PLMN public network.

(2) TSPs with Access Service License may establish isolated Captive Non-Public Network for the enterprises using IMT spectrum acquired by them.

(3) Enterprises setting up Private Captive Networks may obtain the spectrum on lease from TSPs and establish their own isolated network.

(4) Enterprises setting up Private Captive Networks may obtain the spectrum directly from DoT and establish their own isolated network.

To operationalize these decisions, present guidelines are being issued.

Page 1 of 7

3. TSPs setting up CNPNs:

(1) TSPs with Access Service License shall be allowed to provide CNPN as a service to an enterprise by using network resources (such as through network slicing) over its PLMN public network.

(2) TSPs with Access Service License shall be allowed to establish isolated CNPN for enterprises using IMT spectrum acquired by them.

(3) Amendments to Unified License (UL) and Unified Access Service License (UASL) to these effect have been issued on 27th June, 2022.

4. Enterprises setting up CNPNs: To enable enterprises to establish CNPN, Government shall issue License under Section 4 of the Indian Telegraph Act, 1885. The broad guidelines for grant of CNPN license are detailed below.

(1) Eligibility:

(a) An applicant must be an Indian company registered under the Companies Act, 2013.

(b) The applicant shall be the occupant of the geographical area(s)/ property(ies) (either owned or leased) on which such Captive Non-Public Network(s) will be established.

(c) For seeking direct assignment of spectrum from the Government, the networth of the applicant shall not be less than Rs 100 Cr.

(2) Scope of the License:

(a) CNPN Licensee may establish indoor/ within premise isolated Captive Non-Public Network(s) for own use within the area of operations of license.

(b) CNPN license cannot be used for providing commercial telecommunication services.

(3) Area of operation of License:

(a) CNPN license shall be valid within such locations in the country where CNPN licensee is occupant of the geographical area(s)/ property (ies) (either owned or leased) on which such Captive Non-Public Network(s) to be established.

(b) CNPN licensee having operations at more than one location will require only one CNPN license. As and when the CNPN licensee decides to establish a new CNPN at another location, geo-coordinates of such location shall be updated on Saral Sanchar Portal before applying for spectrum.

(4) General conditions:

(a) The applicant shall submit the application for grant of CNPN license at online portal ***www.saralsanchar.gov.in***. Specimen application form is at Annexure-I.

(b) The License shall be valid for 10 years. The Licensee may apply for renewal of the License, which shall be processed as per extant policy.

(c) A unique license number shall be issued to each CNPN licensee, which shall be used by CNPN licensee to apply for spectrum.

(d) CNPN licensee shall deploy network elements as per TEC standards, wherever mandatory, or as per relevant standards set by International Standardization bodies.

(e) CNPN licensee shall not connect its network to public networks in any manner. The public networks include but are not limited to PSTN, PLMN, GMPCS and Internet.

(f) All the network elements of CNPN, including core network, shall be established within the area of operation of the license.

(g) Licensee can connect its CNPNs established at multiple locations through leased lines obtained from the licensed TSPs.

(h) CNPN licensee shall follow the extant guidelines on FDI policy issued by the Government from time to time.

(i) If at any time, any averments made or information furnished for obtaining the license is found incorrect, the application and the license, if granted thereto on the basis of such application, may invite penalties and/or cancellation as may be deemed fit by the licensor.

(5) Fees:

(a) CNPN Licensee shall not be required to pay any Entry Fee and License Fee.

(b) Applicant will have to pay one-time non-refundable application processing fee of Rs. 50,000.

(6) Security conditions:

(a) CNPN licensee shall follow relevant network security conditions and instructions regarding the procurement of telecom equipment from trusted sources as issued by the Government from time to time.

(b) The licensor shall have a right to inspect CNPN, lawfully intercept, and ascertain its bonafide use.

5. Spectrum for CNPN License:

(1) Leasing of spectrum from TSPs:

(a) CNPN Licensee may obtain IMT spectrum on lease from one or more than one Telecom Service Provider (TSP) having Access Service License on mutually agreed terms and conditions. CNPN licensee shall obtain spectrum for each individual geographical area/ location separately.

(b) Such leasing shall be governed by 'Guidelines for leasing of Spectrum to CNPN Licensees' dated 27th June, 2022.

(c) Amendments to UL and UASL allowing leasing of spectrum to CNPN Licensees have been issued on 27th June, 2022.

(2) Direct assignment: Enterprises setting up CNPNs may obtain the spectrum directly from DoT and establish their own isolated network. Department of Telecom will undertake demand studies and thereafter seek TRAI recommendations for direct assignment of spectrum to such enterprises.

(3) SACFA clearance: CNPN licensee shall obtain online SACFA clearances and wireless equipment import permission prior to commencement of operations.

(4) Interference: It shall be the responsibility of the CNPN licensee to ensure that the radio signals are restricted indoors/ within the occupied geographical area. CNPN licensee shall not cause or allow to cause harmful interference to other authorised users of radio spectrum.

(5) EMF exposure: CNPN licensee shall comply with the instructions/ directions/ guidelines issued on EMF exposure norms from time to time.

6. For detailed terms and conditions, applicants may refer to CNPN license agreement.

7. The licensor reserves the right to modify at any time these guidelines, terms and conditions, if in the opinion of the licensor it is necessary or expedient to do so in public interest.

27.6.22

(Anil Kumar Gehlot)
Director (AS-I)
For and on behalf of the President of India
Tele No.: 011-23036864

ANNEXURE-I

GOVERNMENT OF INDIA
MINISTRY OF COMMUNICATIONS
DEPARTMENT OF TELECOMMUNICATIONS
SANCHAR BHAWAN, 20 ASHOKA ROAD, NEW DELHI-110001.

Application for grant of Captive Non-Public Network (CNPN) license

1. Name of Applicant: _____

2. Complete postal address with Telephone and E-Mail:

   i) Corporate Office- _____
   _____

   ii) Registered Office- _____
   _____

   iii) Correspondence Address _____

3. Name, designation and address of authorised contact person with Telephone/E-mail- _____

4. Details of payment of processing fee: _____
   (Bharatkosh Challan No.)

5. Certified copy of Certificate of Registration of the Company to be attached. (Certificate from Company Secretary/ Statutory Auditor countersigned by Director duly authorised by the company to be attached)

6. (a) Details of Promoters/Shareholders of the Company:

S.No.	Name of Promoter/ Shareholder	Indian/Foreign	Equity %	Networth
___	_____	_____	_____	_____

(Complete break-up of 100% of equity must be given. Equity holding upto 5% of the total equity shared among various shareholders can be clubbed but Indian and Foreign equity must be separate.)

(b) **Equity details**

Indian: .....
Foreign:
(i) Land Border sharing country.....
(ii) Others .....
Total .....

(Certificate from Company Secretary/ Statutory Auditor countersigned by Director duly authorised by the company to be attached)

(c) Networth of the company _____

(Certificate from Company Secretary/ Statutory Auditor countersigned by Director duly authorised by the company to be attached)

7. Certified copy of approval of Government of India for Foreign Equity
(To be applicable if FDI is from an enterprise of a country, which shares land border with India or beneficial owner of an investment into India is situated in or is a citizen of any such country)

(Certificate from Company Secretary/ Statutory Auditor countersigned by Director duly authorised by the company to be attached)

8. Address and ownership detail of location(s) where CNPN is to be established. (Certified documents to be attached)

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9. Power of Attorney by Resolution of Board of Directors that the person signing the application is authorised signatory.

10. Terms and conditions:

A. The applicant shall comply with all the terms and conditions of the CNPN guidelines and CNPN license agreement.

B. In case any information submitted in the application is found to be incomplete in any respect or if found with conditional compliance or not accompanied with the processing fee, the application shall be summarily rejected.

C. The applicant shall have to sign the License Agreement within the prescribed time limit, otherwise application shall be rejected and processing fee shall be forfeited.

D. All matters relating to the application or license if granted will be subject to jurisdiction of Courts/ Tribunal(s) in Delhi only.

I/We have read with the terms and conditions mentioned above and shall comply with all of them.

Date _____
Place _____

Digital Signature and Name of the Authorised Signatory