

23 April 2025

**Shri Sameer Gupta,
Advisor (Networks, Spectrum and Licensing-I),
Telecom Regulatory Authority of India**

Dear Sir,

**Subject: BIF's Submission to TRAI's Pre-Consultation Paper on Review of Existing
TRAI Regulations on Interconnection Matters dated 3 April 2025**

1. We would like to thank the Authority to provide stakeholders with the opportunity to provide their inputs on this critical subject matter. This preliminary submission is in response to TRAI's pre-consultation paper on review of existing TRAI regulations on interconnection matters.

Background

2. Interconnection is the life and soul of telecommunication networks. In fact, the establishment of the Telecom Regulatory Authority of India (TRAI) in 1997 was a pivotal response to the challenges faced during the liberalization of India's telecommunications sector. As private operators began entering the market, significant disputes emerged, particularly concerning interconnection arrangements with the incumbent government operator. **These conflicts highlighted the need for an independent regulatory body to ensure fair competition and to oversee the evolving dynamics of the telecom industry.**
3. Interconnection is the ability of different telecom networks to connect and communicate with each other and is fundamental to a seamless telecommunications experience for consumers. Without effective interconnection, transmissions between networks can be hindered, leading to service disruptions and reduced consumer satisfaction. In the absence of a regulatory framework, dominant players could potentially leverage their position to impose unfavorable interconnection terms on smaller or new entrants, thereby stifling competition and innovation.
4. One of TRAI's primary responsibilities is to facilitate effective interconnection between service providers, thereby promoting a level playing field and fostering a competitive environment conducive to growth and innovation in the telecom sector.
5. The telecom sector is undergoing a major transformation and is poised to become a major driver of the \$1Tn Digital Economy by 2028. Some of the key enablers include the enactment of the Telecommunications Act, 2023, the notification of a number of rules on various constituents of the Act, and the increasing prominence of IP-based, virtual and disaggregated network architectures. All of this has resulted in establishing a clear need to revisit and modernize the interconnection regime. The following observations and suggestions are intended to serve as preliminary inputs to shape the scope and structure of the proposed Consultation Paper on this subject as outlined by TRAI in this Pre-Consultation Paper.

6. As mentioned, the interconnection framework in India has evolved through a series of regulations issued over the past two decades, ranging from the Interconnection (Charges and Revenue Sharing) Regulation, 2001, to the more recent Telecommunication Interconnection Regulations, 2018. These frameworks have played a foundational role in ensuring fair competition and seamless service delivery in a multi-operator environment. **However, the present-day telecom ecosystem has changed significantly in terms of technology and market structure. Interconnection is no longer just about physical POIs and TDM voice, it now involves dynamic, software-defined and service-specific interfaces that must work seamlessly in an increasingly virtualized and packet-switched environment. Thus, a comprehensive re-evaluation of the existing interconnect frameworks is both timely and necessary.**

We would like to highlight the following key consideration for the next stages of this consultation:

A. Changes in the Context of the New Authorisation Regime

7. First, it is important to examine the **efficacy of the existing interconnection regulations within the new context introduced by the Telecommunications Act, 2023**. The Act introduces a distinction between Service Authorisations and Network Authorisations, thereby unbundling the layers of service delivery and network/infrastructure operation. This redefinition of roles raises critical questions:
- Are the existing interconnection regulations equipped to address interactions between these distinct entities as well as amongst different elements within the same layer?
 - Do they adequately provide for interoperability, clarity of responsibility and protection against discriminatory or anti-competitive practices in a more fragmented market?
8. **A unified and modular interconnection framework, capable of adapting to both legacy and future technologies, may be the way forward. Such a framework should be technology-neutral, service-agnostic and easily adaptable to evolving use cases.**
9. In its **Recommendations on the Terms and Conditions of Network Authorisations to be Granted Under the Telecommunications Act, 2023**, TRAI has recommended that the Authority recommends that the interconnection between authorised entities establishing, operating, maintaining, or expanding the telecommunication network under section 3(1)(b) of the Telecommunications Act 2023, and the authorised entities providing telecommunication services under section 3(1)(a) of the Telecommunications Act 2023, should be left to mutually agreed terms between them, at this stage.
10. In these recommendations, TRAI's view is that in case two networks offer substitutable services, i.e. share a horizontal relationship between them, a network operator has the incentive to foreclose or marginalize its opponent network through various methods including high interconnection fees. On the other hand, in case two networks are vertically related,

interconnection between them is mutually profitable and therefore, generally, does not require any regulatory intervention.

11. While TRAI recognizes that vertically integrated networks generally find mutual benefit in interconnection without the need for substantial regulatory intervention, there may be need for analysing and assessing situations where interconnection is sought by an entity potentially holding authorisations limited to specific services like carrier-only or access-only services, especially in limited geographic service areas, with vertically integrated entity holding comprehensive unified authorisations, encompassing all modes of access, carrier, satellite, IoT, and other services

In this context, it is necessary for TRAI to establish a robust and transparent regulatory framework designed to protect the interests of all service providers.

12. In its **Recommendations on the Framework for Service Authorisations to be Granted Under the Telecommunications Act, 2023**, TRAI has recommended in **Para 2.104** thereof that-

“(c) The Unified Service authorised entity should be permitted to-

- (ii) **Interconnect with other eligible authorised entities for handing/ taking over the PSTN, PLMN and GMPACS telephony traffic at any mutually agreed location, failing which, the interconnection should take place at the point of interconnection(s), as specified in the TRAI s interconnection regulations.”***

13. The interconnection regulation proposed by TRAI should ensure that other interconnecting entity should not face disadvantages for interconnection locations and terms and the negotiations should be time-bound.
14. To ensure that entities with varying scales of operation can engage on equitable terms, **it is essential for TRAI to keep a regulatory oversight so that the interconnection agreements proceed smoothly and seamlessly.** The Authority may consider:
 - Defining what is a ‘Market’
 - Defining what constitutes ‘Significant Market Power’
 - Publication of standardized interconnection offers and the basis for the same as considered appropriate by the regulator
15. Furthermore, TRAI should consider **establishing an efficient dispute resolution mechanism**, providing entities with prompt and effective remedies. Such a mechanism should incorporate clear timelines, interim protection measures, and binding regulatory decisions to swiftly resolve disputes, thereby ensuring a balanced competitive environment.

B. Operational Challenges

16. There are **practical and commercial challenges that may be faced by service providers in implementing interconnection agreements under the current regime**. Despite regulatory stipulations, delays in POI provisioning, disputes over traffic forecasts and capacity planning, and challenges in enforcing parity in commercial negotiations remain prevalent. With the rise of IP-based interconnects and the expansion of edge-based infrastructure, these issues are likely to intensify unless addressed systematically. **A clear framework that specifies time-bound finalisation of interconnect agreements and provisioning of interconnection and establishes a fair and transparent mechanism for dispute resolution, maybe considered.**
17. Additionally, as part of the scope of the proposed consultation, TRAI may consider review of the International Call Termination Charges under the IUC (16th Amendment) Regulations and charges for related facilities including international termination charges.

C. Impact of Emerging Technologies

18. The **impact of emerging technologies on interconnection requirements must be central to the consultation exercise**. The deployment of 5G networks introduces complexities such as network slicing, edge computing and service orchestration across hybrid networks (i.e. On-Demand Communications and Critical Infrastructure Management). **Interconnection models will need to be redefined to accommodate virtual POIs, dynamic bandwidth allocation and quality of service differentiation for specific applications or slices**. Moreover, the proliferation of private 5G networks, 'neutral host' solutions and industry-specific enterprise networks further complicates the traditional understanding of interconnection. Regulatory clarity is essential on how such private networks will interconnect with public networks and how numbering and security obligations will be shared.

D. Learnings from Global Practices

19. Globally, regulators have responded to similar transitions by adopting innovative approaches that India could consider. Ofcom in the UK and BEREC in the EU have moved towards consolidated, forward-looking interconnection codes that encompass both legacy and IP-based interconnection. EU enforces Equivalence of Inputs (EOI) to ensure that vertically integrated operators offer the same terms to third parties as they do to their own affiliates. EOI principles must be applied in India to interconnect provisioning, port charges, and access timelines—especially where a dominant operator exists.
20. The FCC in the US mandates maintenance of transparent registers of interconnect agreements and has a structured escalation path for resolving disputes. In Singapore and Australia, regulators have strong compliance mechanisms. India could benefit from adopting similar principles such as Equivalence of Inputs (EOI), mandatory filing of interconnection agreements with confidentiality safeguards and the introduction of performance benchmarks linked to provisioning and service quality.

E. Links with Consumer Experience and Network Efficiency

21. Equally important is the **recognition of interconnection as a critical enabler of consumer experience and network efficiency**. From call quality and message delivery to number portability and service continuity, the user experience is deeply dependent on the robustness of interconnection arrangements. Congested or poorly provisioned POIs can result in call drops, slow call setup times and poor audio quality, all of which erode consumer trust. At the network level, well-designed interconnection frameworks enable optimized traffic routing, redundancy and resilience, which in turn improves uptime and reduces operational costs. As such, the interconnection regime must be designed with consumer interest at its core, ensuring minimum performance standards, timely provisioning, and incentives for quality improvement.

Summary

22. In terms of the scope of the consultation paper, it would be useful for TRAI to examine **definitions and responsibilities under the new authorisation framework. Further, it would be important to explore models for IP interconnect including SIP-based standards, consider the implications of virtual and edge-based interconnection and assess the potential role of APIs in enabling agile service delivery**. The paper could also invite stakeholder inputs **on harmonizing interconnection obligations for private networks, neutral hosts and public service providers, with appropriate safeguards. Additionally, as part of the scope of the proposed consultation, TRAI may consider review of the International Call Termination Charges under the IUC (16th Amendment) Regulations and charges for related facilities including international termination charges.**
23. BIF reiterates that TRAI's proposed consultation on interconnection presents a unique opportunity to reframe the regulatory architecture in a manner that is future-ready, innovation-friendly and consumer-centric. We urge TRAI to take a comprehensive approach that balances technical feasibility, regulatory clarity and market fairness and we hope that the above given inputs will be found relevant for drafting the proposed Consultation Paper.

Thanking you.

Regards,



T.V. Ramachandran,
President,
Broadband India Forum