TATA

15 December 2025

Shri Sameer Gupta,
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Tower F, NBCC World Trade Centre,
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Subject: Tata Communications Limited's response to TRAI Consultation Paper on the Review of existing TRAI Regulations on Interconnection matters

Dear Sir,

This is with reference to the TRAI consultation Paper No. 11/2025 dated 10-11-2025 and TRAI Press Release No. 146/2025 dt. 08-12-2025 on **"Review of existing TRAI Regulations on Interconnection matters"**

In this regard, please find enclosed herewith Tata Communication Limited's inputs for your kind consideration as **Annexure**.

We request you to kindly consider our submissions while finalizing the consultation paper and would be happy to provide any additional information, if required.

Thanking You,

Yours Sincerely,

Alka Selot Asthana
Global Head - Regulatory
Tata Communications Limited

Enclosed: As above

Annexure

Tata Communications Limited's response to TRAI Consultation Paper on Review of existing TRAI Regulations on Interconnection matters

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Preamble

At the outset, we thank TRAI for providing us an opportunity to share our comments/inputs on this very significant consultation paper on Interconnection. This paper aims to modernise and consolidate the entire interconnection regulatory framework to reflect 4G/5G, IP, and satellite-era realities while ensuring fair, efficient, and future-ready interconnect arrangements among TSPs by doing comprehensively overhaul of existing nine interconnection regulations issued since 1999 to make them coherent, technology-neutral and future-ready. The paper aims to rationalise technical and commercial aspects of interconnection, including migration from TDM to IP, redesign of POI topologies (for mobile, fixed and satellite), and full review of interconnection-related charges such as termination, carriage, transit, port and international settlement arrangements. The paper also examines competition and consumer dimensions, including how the framework affects smaller operators and new satellite players, and whether rules should better address nuisance traffic like unsolicited commercial communications at the interconnect layer.

Although TRAI has periodically updated interconnection regulations to adjust with the market dynamics and technology advancements, it is observed that some provisions are either no longer applicable or have diverged from their intended direction due to subsequent developments or global practice. TRAI has correctly enumerated in the consultation paper that the technological and regulatory changes which are taking place in the sector might impact on the provisioning, management, and cost of interconnection. The existing regulations may or may not adequately address the unique technical and commercial aspects of interconnecting these new technology-driven networks and services.

We are of the strong view that considering telecom market dynamics, evolving technologies and service requirements to cater to the Enterprises, Interconnection framework is closely dependent on the business goals and traffic patterns and network architectures hence the interconnection between operators should be left to the market forces and on mutual terms & conditions with a light touch regulatory framework irrespective of voice or data. TRAI may intervene only in exceptional cases, wherein operators are unable to close the interconnection agreements on mutual basis, impacting the customers. It is a stable and mature market, and we do not see reason for price fixation for Interconnection. Also, there is an immense need to ensure that the Regulations should be technology agnostic and future ready. Technology-agnostic frameworks avoid prescribing specific tools or standards, enabling adaptability to evolving paradigms without frequent amendments, while future readiness incorporates forward-looking provisions like scalability clauses and periodic reviews to accommodate unforeseen advancements. This approach not only minimizes compliance burdens for stakeholders but also fosters innovation, ensures equitable market access, and safeguards consumer interests amid digital transformation.

In view of the same, we urge TRAI to have a holistic approach while finalizing its recommendations on various issues raised in the paper considering the fact that a balanced approach that encourages investment in infrastructure, facilitates adoption of modern technologies, and ensures regulatory predictability will be key to strengthening India's position as a digital leader globally.

In view of above, our issue wise comments / inputs are as follows:

Q-1. For PSTN to PSTN, PLMN to PSTN and PSTN to PLMN, should the interconnection level be specified at LSA level? If yes, should the existing POIs at the LDCA/SDCA level also be migrated to the LSA level? Kindly justify your response.

Q-2. For PSTN to PSTN, PLMN to PSTN, PSTN to PLMN and PLMN to PLMN, should interconnection be allowed at a level other than the LSA level, based on mutual agreement? Kindly justify your response.

Tata Communications' Response to Q1 to Q2:

- LSA-level interconnection is suitable for PSTN/PLMN operators. Any migration from LDCA/SDCA to LSA should apply only to access voice service operators, not on data carriers. Our priority is IP-based, globally aligned, scalable interconnection frameworks.
- In today's digital ecosystem and landscape, especially for enterprise-focused ISPs, there should be an adequate flexibility in determining POI locations. Approach should reflect how networks are actually built and operated, reduces unnecessary duplication of infrastructure, and significantly lowers deployment costs and timelines.
- Tata Communications operates as a Tier-1 ISP, ILDO, and NLDO, playing a critical role in India's internet backbone and global transit ecosystem. We do not operate PSTN or PLMN retail networks, and therefore interconnection frameworks around LSA-level voice POIs should not impose obligations, costs, or compliance burdens on ISPs or international carriers.
- Thus, Tata Communications supports a future-ready, IP-first, globally aligned interconnection framework. Regulations should sharply differentiate between voice access operators and internet backbone providers, ensuring that ISPs are not subjected to legacy TDM-era obligations or POI mandates irrelevant to modern IP networks. This will enable continued growth of India's internet ecosystem while preserving efficiency, innovation, and global competitiveness.

Q-3. Based on your response to Question 1 and 2 above, what changes, if any, are required in the level of interconnection / point of traffic handover as provided in the following:

a) Telecommunication Interconnection Regulations (TIR), 2018, and

b) Guidelines annexed to the Telecommunication Interconnection (Reference Interconnection Offer) Regulations, 2002?

Kindly justify your response.

Tata Communications' Response to Q1 to Q3:

- Presently, Points of Interconnection (POIs) are established at the SDCA level which introduces operational complexity. In our view, the establishment of Points of

Interconnection (POIs) should be driven by the practical needs of an operator's network design and service delivery objectives, rather than being governed by prescriptive regulatory requirements. Also, necessary changes may be required in the Telecommunication Interconnection Regulations (TIR), 2018 for ensuring LSA-level interconnection.

- The core objective of POI provisioning is to ensure reliable, seamless, high-quality connectivity to end users. Allowing such flexibility will help achieve this goal while aligning with international best practices that emphasize efficiency, scalability, and the broader goal of accelerating digital transformation. POI should be decided basis network design and not be specified by the Regulation and left to the mutual agreement among the interconnection seeker and provider.
- Tata Communications recommends that ISPs and purely IP-based operators be exempt from TDM or LSA-based POI requirements due to technological evolution, increasing traffic volumes, and the need to minimize disputes.
- TRAI should explicitly clarify in the Regulations that internet traffic, IP transit, peering, CDN, and cloud connectivity are outside pure play voice POI obligations.
- Adequate flexibility to Enterprise focused service providers for determining POI location(s) should also be ensured in the regulation.

Q-4. Is there a need to mandate multi-path resiliency and redundancy in the Point of Interconnection (POI) framework to mitigate link failure at the primary POI in the case of:

i. PSTN-PSTN interconnection,

ii. PLMN-PLMN interconnection, and

iii. PLMN-PSTN interconnection?

If yes, kindly provide an appropriate architectural framework with diagram. Kindly justify your response.

Tata Communications' Response:

- In today's digital ecosystem and landscape, especially for enterprise-focused ISPs, flexibility is essential in determining POI locations. Regulatory Approach should reflect how networks are actually built and operated, reduces unnecessary duplication of infrastructure, and significantly lowers deployment costs and timelines.
- The core objective of POI provisioning is to ensure reliable, seamless, high-quality connectivity to end users. Allowing such flexibility will help achieve this goal while aligning with international best practices that emphasize efficiency, scalability, and the broader goal of accelerating digital transformation. Thus, POI should be decided basis network design and not be specified by the Regulation and left to the mutual agreement among the interconnection seeker and provider.
- We are of the view that no regulatory mandate is needed for multi-path resiliency and redundancy in the POI framework in the telecom network. We believe that the multi-path resiliency will inherently strengthen as interconnection shifts to higher aggregation levels. For example, adopting four regional IP interconnect POPs (Point of Presence)—with each location equipped with primary and secondary media paths—naturally introduces redundancy similar to data-network interconnect models.
- From Tata Communications perspective, we already maintain multi-path diversified IP backbone architecture, making additional POI mandates unnecessary for ISPs.

Q-5. Is there a need to incorporate security provisions in the interconnection framework to ensure network security? If yes, kindly provide details along with an appropriate architectural diagram. Kindly justify your response.

Tata Communications' Response:

No. There is no requirement to incorporate separate security provisions within the interconnection framework. Modern telecom networks are built on security-by-design principles, and every licensed service provider is already obligated to ensure end-to-end network security as part of its licensing conditions. In addition, a comprehensive security regime has been established under the Telecommunications Cyber Security Rules issued pursuant to the Indian Telecommunications Act, 2023.

Given this robust and overarching security architecture, introducing additional or interconnection-specific security mandates would be duplicative, could create operational and compliance complexities, and may even result in inconsistencies with the existing regulatory security framework.

Further, TRAI may focus prescribing guidelines on strengthening IP-layer security by specifying adoption of recognised technical standards—such as DNS Security Extensions (DNSSEC) for authenticating DNS responses, BGP security and routing-hygiene measures to prevent route hijacks and leaks, and network-wide DDoS mitigation practices—while deliberately avoiding prescriptive, location-specific mandates on where IP interconnection points (POIs) must be established. In such an approach, TRAI would encourage or require TSPs and other licensees to implement best-practice configurations (for example, DNSSEC validation, secure BGP routing, RTBH/Flowspec-based DDoS controls, and CERT-In aligned mitigation guidelines) but leave flexibility with TSPs to design their own POI topology, so long as they meet QoS, redundancy and security outcomes.

Q6. (a) Should IP-based interconnection be mandated for new interconnections in the regulatory framework? Kindly justify your response.

(b) Should TSPs be mandated to migrate existing TDM based E1 interconnection to IP-based interconnection within a specified period? If yes, suggest timelines. Kindly justify your response.

Tata Communications' Response:

- There has been technological evolution from circuit-switched voice platforms to IP based, packet-switched networks and data-dominant services. therefore, In the evolving interconnection regulatory framework, where technology is migrating from TDM to IP networks, there is an immense need to ensure regulations remain technology-agnostic and future-ready. This transition demands flexible provisions that transcend legacy TDM-based interconnection usage charges (IUC), accommodating IP-centric models like packet-switched traffic, VoIP peering, and next-gen architectures. By embedding scalability mechanisms, periodic reviews, and outcome-based metrics—rather than rigid technology prescriptions—TRAI can foster seamless interoperability, reduce compliance costs, promote competitive equity, and align India's telecom ecosystem with global digital advancements.
- Tata Communications support transitioning to IP-based interconnection at POIs, replacing traditional TDM-based systems and IP-based interconnection for all new interconnect arrangements. This shift will enhance Quality of Service (QoS), improve POI uptime especially for data-centric applications that now dominate telecom traffic—while phasing out

legacy TDM systems that impose capacity constraints and inefficient multiplexing and better align India with global best practices.

- Thus, we support mandatory IP-based interconnection for voice operators. However, this mandatory migration framework must incorporate explicit safeguards against cost pass-through to non-access service providers (such as enterprise TSPs), justified by the asymmetric traffic economics where access providers generate disproportionate origination/termination volumes, yet enterprise backhaul remains mission-critical for national digital infrastructure.
- As a global carrier, Tata Communications also supports aligning India with SIP/SIP-I, VoIP peering, and global IPX models.

Q7. Should the existing processes of 'provisioning and augmentation of ports at POIs' under Chapter IV of the TIR 2018 in respect of following need revision:

a. **Seeking of ports at POIs,**
b. **Request for initial provisioning of ports, and**
c. **Request for augmentation of POIs?**

Kindly provide your response with justification.

Tata Communications' Response:

- The core objective of POI provisioning is to ensure reliable, seamless, high-quality connectivity to end users. Allowing such flexibility will help achieve this goal while aligning with international best practices that emphasize efficiency, scalability, and the broader goal of accelerating digital transformation. Thus, POI should be decided basis network design and not be specified by the Regulation and left to the mutual agreement among the interconnection seeker and provider.
- TRAI may also recommend simplification of POI Establishment: Presently, Points of Interconnection (POIs) are established at the SDCA level which introduces operational complexity. In our view, the establishment of Points of Interconnection (POIs) should be driven by the practical needs of an operator's network design and service delivery objectives, rather than being governed by prescriptive regulatory requirements.
- Adoption of digital means/ automation for port provisioning process with standardised SLAs to replace any lengthy manual procedures with digital workflows and clear timelines. This supports rapid scaling (cost-efficient growth) and reduces entry barriers by speeding up interconnect setup.
- POI port provisioning, augmentation timelines, bank guarantees, and penalties should apply only to PSTN/PLMN operators, not on ISPs.
- Internet peering, transit, IP-VPN, CDN offload, and cloud interconnect must and continue to remain driven by commercial agreements, not by regulated POIs.
- Additionally, ensuring a level playing field requires uniform fees and procedures for all authorised entities providing interconnection services. These entities should operate under a consistent licensing regime, with zero license fees attributable to interconnection activities, as the interconnecting operators are already paying applicable license fees.

Q8. Should the existing framework for Interconnection process and timelines, as provided in the existing TRAI regulations including, The Telecommunication Interconnection Regulations (TIR) 2018, The Telecommunication Interconnection (RIO) Regulations, 2002,

and The Telecommunication Interconnection (Charges and Revenue Sharing) Regulation 2001 be revised or continued.

Kindly indicate challenges, if any, currently being faced in the implementation of the framework by the TSPs and their possible remedies.

Kindly provide your response with detailed justifications.

Tata Communications' Response:

- Over the years, the Existing regulatory framework (including the TIR 2018, RIO 2002, and Charges and Revenue Sharing 2001 Regulations) has evolved into a stable and comprehensive regime that sufficiently addresses the operational, procedural, and technical requirements for interconnection. Its timelines are practical and well-suited for efficient implementation.
- However, TRAI may review the same with the aim to enable streamlined dispute resolution processes and ensure a level playing field. Legacy procedures for acceptance testing should be streamlines, to reduce avoidable delays. It should be ensured that strict adherence to prescribed POI commissioning timelines is enforced uniformly across all operators.
- Overall, the structure of the current framework may be maintained but updated for digital execution.

Q9. Whether there is a need to revise the existing process of disconnection of POIs as provided in the regulation 11 of the Telecommunication Interconnection Regulations (TIR) 2018? If yes, what specific changes should be done in the disconnection procedure?

Kindly justify your response.

Tata Communications' Response:

- We do not envisage any need to revise the existing process of disconnection of POIs as provided in the regulation 11 of the Telecommunication Interconnection Regulations (TIR) 2018. The disconnection process as provided in the regulation is appropriate.
- Moreover, as interconnection progressively shifts to higher levels and the principle of true reciprocity in interconnection charges is fully implemented, the scope for disputes will significantly diminish, making such disconnection provisions largely redundant.
- The only suggestion is the implementation of the regulation should be automated through online portal so that all stakeholders are duly and simultaneously informed.

Q10. Is there a need to introduce a process for the surrender or closure of POIs in the regulatory framework? If yes, what should be the criteria, procedure, charges, and timelines, including the minimum retention period for POIs before a surrender or closure request can be made? Kindly justify your response.

Tata Communications' Response:

- es, there is a need to introduce a process for the surrender or closure of POIs in the regulatory framework especially in case of voluntarily surrender of POI.
- Following are the suggestions:
    - Criteria – reduction in the projected traffic, mutual consent
    - Procedure – sending notification to the other TSP well in advance, and the terminating TSP should either confirm closure or plan migration in a time bound manner.

  - Charges – no separate charges to be imposed towards surrender of POI and interconnection / POI usage charges should be restricted up the date of surrender.
  - Timelines including the minimum retention period for POIs before a surrender or closure request can be made – one month.
- The regulation should clearly stipulate that surrendering a POI permanently extinguishes all future claims to that specific interconnect point, providing definitive regulatory clarity. Any costs arising from delays in discontinuing the POI thereafter should rest solely with the party responsible for the delay and should not be passed on to the other operator.
- Automating this surrender process vis online portal would enhance operational efficiency and reduce administrative burdens. The regime must avoid imposing onerous preconditions, instead enabling seamless pruning of redundant PoIs as networks naturally evolve toward more efficient topologies.

Q11. In order to safeguard the interest of TSPs arising due to financial obligations of interconnection, is there a requirement for furnishing bank guarantee by one TSP to the other TSP? If yes, please provide the process and methodology for determining the initial bank guarantee amount and any subsequent bank guarantee amount, if required.

Kindly justify your response.

Tata Communications' Response:

- The requirement for furnishing bank guarantee by one TSP to the other TSP to safeguard the interest of TSPs arising due to financial obligations of interconnection is a long-standing commercial safeguard practice intended to protect the interconnection provider against financial defaults, primarily related to the non-payment of Interconnection Usage Charges (IUC) and other liabilities.
- TRAI should mandate that port charges and associated Bank Guarantees should be implemented on reciprocal basis and Bank Guarantee can be made with some threshold of MoU cost.
- We also suggest TRAI to review the requirement of bank guarantees for interconnection-related payments made to BSNL. These guarantees could be calibrated based on operator risk profiles and prevailing industry norms.
- BSNL should be treated at par with other market players.

Q12. Should a procedure be established for addressing delays in the payment of interconnection-related charges? If yes, what should be the procedure to address such delays? Kindly provide your response with justification.

Tata Communications' Response:

- We are of the view that there is a need for an establishing standardized procedure for resolving delays in interconnection charge payments, building on existing penal interest provisions in interconnect agreements. Without such uniformity, regulatory and commercial disputes proliferate, undermining financial discipline and inter-operator harmony. Timely IUC settlement is critical for sector stability, ensuring equitable treatment across TSPs and preventing uneven enforcement that distorts competition.
- The default interest rate should be such that discourages delay in payment and compensates the affected part adequately.

Q13. Is there a need to revise the financial disincentive framework as provided in these regulations. If yes, what specific changes should be done? Kindly justify your response.

Tata Communications' Response:

- The existing financial penalty for violations of Interconnection Regulations remains robust and adequately deterrent, having effectively maintained compliance across diverse TSP scales since its inception.
- Revisiting or enhancing this regime lacks justification, as empirical evidence shows no systemic non-compliance patterns warranting escalation, while disproportionate hikes risk stifling legitimate operational flexibility for smaller operators and captive users—contrary to the Telecommunications Act 2023's emphasis on proportionate enforcement. This calibrated structure already balances deterrence with sector growth imperatives.

Q14. Is there a need to revise the existing SMS termination charge? If yes, what are the considerations necessitating such a revision? If not, kindly provide justification.

Tata Communications' Response:

- SMS Termination charge should be cost-based and adhere to the "work done" principle. An operator, who have established only an SMSC (Short Message Service Centre) should not be compared with full-fledged Telecom Service Providers (TSPs) who have established large mobile networks (BTS/BSC/MSC) and should be liable to pay proportionately more termination charges.
- There are several key considerations that necessitate a review and potential revision of the current SMS termination charge regime:
    - Technological advancements - The telecommunication industry is undergoing a significant shift from traditional telecom networks to modern IP-based networks. The 2 paise charge towards SMS termination charge remained unchanged for "quite some time," may no longer reflect the actual cost of involved to modernized the networks.
    - Changed Market Dynamics and Bulk Usage - There is increasing reliance on SMS traffic for critical functions (e.g., OTPs, banking alerts) and a surge in bulk SMS usage by enterprises and public service providers. The current charge needs to be examined to ensure it remains reasonable and equitable in terms of recovering actual costs and ensuring a level playing field for all market participants.
    - Termination charge should be cost-based and adhere to the "work done" principle. An operator, who have established only an SMSC (Short Message Service Centre) should not be compared with full-fledged Telecom Service Providers (TSPs) who have established large mobile networks (BTS/BSC/MSC) and should be liable to pay proportionately more termination charges.
- Our Recommendation:
    - IUC SMS charge of 2 paise should be reviewed on cost-based and "work done" principle.
    - SMS Termination charge on promotional SMS should be reviewed upward and increase from up to 5 paise (₹0.05) termination charge to 7 paise, in order to further curb misuse and discourage spam.
- Further, all international SMS traffic (including A2P messages) must be routed through ILDO gateways for ensuring regulatory oversight and prevention of bypassing the ILD networks. Considering the fact that the interconnection framework serves as the

backbone, ensuring all stakeholders involved (MNOs, aggregators, ILDOs) adhere to standardized routing and reporting processes, therefore, TRAI should ensure enforcement of SMS Aggregation directions for routing of all international SMS through ILDOs with definitive cost of SMS termination in line with the SMS termination charges defined for inter access operator handover.

Q15. Is there a need to prescribe SMS carriage charges when an NLDO carries SMS between the LSAs? If yes, what principles and methodology should apply? If not, kindly provide justification.

Tata Communications' Response:

- Yes, there is a need to prescribe SMS carriage charges when an NLDO carries SMS between the LSAs having technical and economic reasons to prescribe a carriage charge.
- The need for a charge is based on the core regulatory principle of compensation for service provision, which is emphasized in the provided context regarding termination charges:
  - If an NLDO is mandated to carry traffic across its network, it is performing a necessary function and incurring costs (network infrastructure, maintenance, signaling, transit). Therefore, a charge is necessary to compensate the NLDO for the work done in transporting the message from the originating LSA to the terminating LSA network.
  - Fair Compensation - The interconnection framework is "designed to ensure fair compensation to service providers for delivering messages that originate from other networks." This principle applies not just to termination but to all necessary legs of the interconnection path, including carriage by an NLDO.
  - Prescribing a fair, cost-based carriage charge ensures the NLDO has the incentive to maintain and upgrade the network infrastructure required to efficiently handle SMS transit across the country, aligning with the goal of fostering innovation.

Q16. Is there a need to revise the existing access charge to be paid by the service provider to the originating provider for IN services? If yes, kindly provide detailed explanation; if not, kindly provide justification.

And

Q17. Are there any difficulties that service providers encounter in complying with existing IN Regulations, 2006 in Multi-Operator and Multi-Network Scenario? Kindly describe these challenges in detail and suggest possible regulatory remedial measures to overcome these challenges.

Tata Communications' Response to Q16 & Q17:

- At the outset, we submit that this Regulation has played a vital role in enabling IN service interconnection on a reciprocal charge basis and continues to function effectively.
- A primary contributing factor to the very low penetration levels observed in IN (Intelligent Network) services is the high cost of service resulting from the current Interconnect Usage

Charges (IUC). To enable the provision of competitive and attractive pricing for both Enterprise and SME customers, we recommend to implement bill & keep regime.

- This will significantly boost the adoption of Toll-Free services, which are a crucial and often mandatory communication solution, particularly within sectors like Banking.
- Further, definition of Interconnection for International Toll-Free Services between ILDOs and Access Operators should be determined to be in line with ILD Termination traffic interconnection points.

Q18. Is there a need to revise the Telecom Regulatory Authority of India (Transit Charges for Bharat Sanchar Nigam Limited's CellOne Terminating Traffic) Regulation, 2005? Kindly provide your response with justification.

Tata Communications' Response:

- This Regulation was introduced pursuant to an order of the Hon'ble TDSAT to prevent the imposition of an unlawful transit charge by BSNL for routing calls to CellOne subscribers and therefore does not require reconsideration at this stage.
- Since 2005, the entire mobile network architecture has shifted. The market has moved from 2G/3G to 4G/5G IP-based core networks. Interconnection today primarily happens between Mobile Switching Centres (MSCs) or equivalent IP gateways, making the reliance on and specific routing through the PSTN switches for mobile-to-mobile termination largely obsolete.

Q19. The existing interconnection regulatory framework provides for application of origination, carriage, transit, transit carriage and termination charges for various levels of interconnections for PSTN-PSTN, PLMN-PLMN, PLMN-PSTN. Based on the interconnection regulatory framework suggested in your response in Questions 1, 2 and 3 above, should there be a review of these charges? Kindly justify your response.

Tata Communications' Response:

The Telecom sector is moving from circuit-switched voice platforms to IP-based, packet-switched networks. IUC charges have been periodically recalibrated, but a comprehensive reassessment of the fundamental structure and methodology is now necessary to maintain the framework's relevance in the digital age.

With this context, yes, there should be a review of origination, carriage, transit, transit carriage, and termination charges. The review should:

- Align charges with actual cost structures in IP-based and NGN environments.
- To support International Long Distance (ILD) operators, TRAI must reassess the international carriage charge regime. Infrastructure-related costs are high and undermine competitiveness. A balanced, globally aligned model for international settlement is critical to support the growth of cross-border communications in a digital-first ecosystem
- Consider simplification of the charge framework.
- Ensure charges promote competition and consumer interest.
- ILDO transit charges should be in line with NLD Carriage charges
- Determination of termination charges for International Toll-Free services along with interconnection point determination as above in line with IUC applicable for ILD termination traffic.

Q20. For termination of emergency calls/SMSs from one T P's network to another T P's network, should there be a provision of any additional charges other than applicable IUC? If so, what should be the charges and the basis thereof?

Tata Communications' Response:

No, there should not be any additional charges beyond applicable IUC for termination of emergency calls / SMS between TSP networks.

If charges were ever considered, they should:

- Be strictly cost-based and nominal.
- Apply uniformly across all TSPs.
- Avoid creating barriers to emergency access.

However, the recommended approach is zero additional charges beyond IUC principles which mandates non-discriminatory access, in line with public interest and global best practices. A zero-IUC rate for emergency traffic ensures that the TSPs handle the calls based on public interest and not commercial gain, promoting seamless connectivity across all networks regardless of the originating operator's financial status.

Q21. Should the International Termination Charges (ITC) for international incoming calls to India be revised? If yes, what are the considerations necessitating such a revision. Kindly provide your response with justification.

Tata Communications' Response:

- Yes, ITC for international incoming calls to India should be reviewed and revised. There is a strong case for a review and upward revision of the ITC ceiling, based on the principle of cost recovery and the need to address market distortion. The core principle of the IUC regime is that inter-operator payments should be cost-based. The existing range of ₹ 0.35 to ₹ 0.65 per minute is no longer accurately reflect the modern cost of termination and prevailing global cost realities. particularly for calls routed through International Long-Distance Operators (ILDOs) on newer, high-quality, IP-based networks.
- There is a strong case for substantially increasing the ILD termination rate. India continues to have some of the lowest ITC rates worldwide, despite the fact that termination charges paid to several smaller nations, including those in the Middle East, are considerably higher. This imbalance shows that cost parity is lacking.
- The revision should consider the following aspects:
    - The trend of International incoming traffic to India is showing a significant decrease in the last few years hence upward revision in termination is not recommended as it further accelerate the traffic decline
    - Include measures to deter grey routes: Presence of grey routes is a direct revenue leakage, and grey routes are primarily thriving when the cost of termination is high.
    - Ensure non-discriminatory application across all operators.
- Access Service provider are offering discriminatory rate of ITC (international termination charge) between its own associated ILDO and standalone ILDOs. There is a need to ensure parity between Stand-alone ILDOs and integrated operators to ensure level playing field.
- An additional factor that merits attention is that settlements for incoming and outgoing ILD voice traffic are conducted in U.S. dollars. With the Indian rupee depreciating consistently

over recent years, the effective cost of outbound international termination for Indian operators has risen sharply. However, increasing ISD tariffs for domestic customers (who pay in INR) is not feasible due to limited price elasticity—largely because OTT applications are already eroding traditional telephony revenues. The only viable corrective mechanism, therefore, is to raise ITC payable by foreign operators for terminating calls into India.

- Shift ILD incoming pulse: ILD networks are also experiencing a significant rise in spam and flash calls. Flash call, triggered automatically and disconnected almost instantly for verification purposes, do not carry a termination charge because they are not answered. They simply appear as missed calls for the recipient. These near-zero-duration calls are diverting traffic away from conventional voice and SMS channels since they generate no billable minutes. At the same time, they inflate signalling load, creating operational cost pressure without corresponding revenue.
- Also, increase in ITC will not impact any retail tariffs for Indian consumers, and it will increase foreign exchange inflow to the country.

Q22. Is there a need to address the issue of telemarketing and robo-calls within the interconnection framework? If yes, kindly provide your inputs on the possible approaches. Kindly justify your response.

Tata Communications' Response:

The issue of telemarketing and robo-calls is already comprehensively addressed under the existing regulatory framework, particularly through the Telecom Commercial Communications Customer Preference Regulations (TCCCPR) and its subsequent amendments. Therefore, there is no requirement for separate or distinct treatment within the interconnection framework at this stage. It is recommended that:

- The existing interconnection framework be retained.
- All voice communications intended for commercial purposes, including P2P calls used for business communication, telemarketing, and robo-calls, continue to be governed under the TCCCPR framework; and
- Any entity using voice calls for commercial purposes be mandatorily registered on the DLT platform to ensure accountability and traceability.

While telemarketing and robo-calls remain a valid regulatory concern, the issue does not warrant separate treatment within the interconnection framework. The existing regulatory mechanisms, supported by DLT-based controls, are adequate to address UCC, provided they are consistently enforced. Any future enhancements should focus on strengthening compliance and transparency within the current framework rather than restructuring interconnection architecture.

Q23. Is there a need to revise 'The Telecommunication Interconnection (Reference Interconnect Offer) Regulation, 2002'? If yes, kindly provide the specific revisions. Kindly provide your response with justification.

Tata Communications' Response:

Yes, the RIO 2002 framework requires comprehensive modernisation to align with the current technological, regulatory and market landscape. The telecommunications ecosystem has evolved significantly with IP-based, virtualised, software-defined and multi-layer network architectures becoming the norm, while the existing RIO still reflects a TDM-era design.

This Regulation was initially highly significant during the crucial period, when private service providers were first entering the market, addressing vital interconnection issues with the incumbent Government operators. It played an important historical role in fostering greater competition in mobile and basic telephony and ensuring that all Telecom Service Providers (TSPs) achieved necessary access to interconnected networks. However, with the subsequent notification and implementation of the Telecommunication Interconnection Regulations, 2018, which now comprehensively cover all interconnection requirements and establish specific timelines for associated activities, the original Regulation has become redundant and has effectively lost its relevance. Consequently, to streamline the regulatory framework, IAFI submit that this Regulation should be formally repealed.

Q24. For the purpose of interconnection, is there a need to revise the current categories of 'Services' and 'Activities' to determine Significant Market Power (SMP)?
Kindly provide your response with justification.

Tata Communications' Response:
Yes, there is a need to revise the current categories of 'Services' and 'Activities' to determine Significant Market Power (SMP). Indian telecom sector has undergone significant evolution since the Telecommunication Interconnection (Reference Interconnect Offer) Regulations, 2002 (RIO Regulations) were framed. This evolution warrants a review of the SMP determination criteria:

- The market has moved from being highly fragmented to more consolidated. This structural shift means that the original criteria for determining SMP might no longer accurately capture a provider's dominance or its ability to hinder interconnection in the current environment.
- There has been a transition where technologically advanced IP-based networks are replacing the traditional circuit-switched systems. The current categories of 'Services' and 'Activities' (like Switching Capacity and categories based on older licensing norms) may not adequately reflect market dominance or interconnectedness in an all-IP network environment.
- The original RIO framework was designed to prevent dominant players from dictating unilateral interconnection terms and to protect competition. To ensure the framework still serves this intent in the contemporary market, a re-examination of the SMP designation is explicitly required.
- The updated SMP categories should be consistent with competition principles to ensure that entities with substantial market power cannot distort interconnection access or conditions. There is a need for a level playing field across diverse authorised entities.

Q25. Should the publication of Reference Interconnect Offers (RIOs) on the websites of Telecom Service Providers (TSPs) be mandated?
Kindly justify your response.

Tata Communications' Response:
Yes, the publication of Reference Interconnect Offers (RIOs) on the websites of Telecom Service Providers (TSPs) should be mandated. However, RIO publication mandates should be limited to Access service providers offering regulated interconnection.

Q26. Should there be any interconnection charges? If yes, kindly provide details about the following:

a. the types of infrastructure charges to be levied,

b. the guiding principles for determining such charges along with ceiling, if required, and

c. determination of time-based escalation methodology, if required.

Kindly provide your response with justification.

Tata Communications' Response:

Interconnection entails one TSP leveraging another's network assets—both passive and active—to route calls, data exchanges, and other traffic, necessitating fair compensation grounded in the 2001 Regulations' cost-based charging principle of recovering only incremental costs directly attributable to interconnection provision. This mechanism ensures legitimate cost recovery for infrastructure creation and maintenance, preventing underinvestment in the physical and network backbone essential for multi-operator ecosystems. Beyond cost recovery, it delivers equitable compensation to avoid unfairly burdening infrastructure owners, while incentivizing sustained capital expenditure to foster a competitive, robust telecom landscape aligned with sector growth imperatives.

It is also submitted that for IP-based networks, commercial peering and transit agreements must remain flexible and unregulated.

Q27. Whether following sections of The Telecommunication Interconnection (Charges and Revenue Sharing) Regulations, 2001:

a) Section IV which contains 'Revenue sharing Arrangements' i.e. interconnection usage charges.

b) Schedule I and II which contains rates of interconnection usage charges.

still hold relevance, in view of the subsequent issuance of the Regulation 4 under Section IV which specifies rates of 'Interconnection Usage Charges IUC under 'The Telecommunication Interconnection Usage Charges Regulations, 2003'. Additionally, is there an alternative way to organize these two regulations to enhance clarity and ease of understanding?

Kindly provide your response with justification.

Tata Communications' Response:

The functional provisions of the Telecommunication Interconnection (Charges and Revenue Sharing) Regulations, 2001 have been comprehensively superseded by subsequent frameworks—namely the Telecommunication Interconnection Usage Charges Regulations, 2003 and the Telecommunication Interconnection Regulations, 2018. Consequently, the 2001 Regulations, particularly Sections IV and associated IUC rate schedules, serve no ongoing practical purpose and warrant formal withdrawal to streamline the regulatory corpus and eliminate redundant legacy provisions.

Q28. Is there a need for change, if any, required in respect of following:

i. Port Technology

ii. Port Size (Capacity)

iii. Port Charges

iv. **Any other related aspect**

Kindly provide a detailed response with justification.

Tata Communications' Response:

- The existing regulatory framework governing port technology, capacity allocation, and associated charges requires urgent modernization in light of the rapid technological paradigm shift from legacy circuit-switched networks to advanced IP-based infrastructures.
- This shift represents a fundamental change in how networks are engineered, managed, and monetized, rendering several legacy provisions obsolete or inefficient.
- To promote interoperability, cost efficiency, and service innovation, there is a pressing need to realign regulations with current network architectures and operational realities, ensuring they enable rather than constrain the deployment of next-generation digital connectivity solutions.

Q29. Should port charges be uniform across all services and technologies? Kindly provide detailed response for the following categories specifically:

a. **Fixed Line Service/ Mobile Service/ NLD service/ ILD service, and**
b. **E1 (TDM) based interconnection and IP based interconnection.**

In case non-uniform charges are suggested, what methodology should be followed for calculation of port charges for above mentioned categories of services and technologies. Kindly provide a detailed response with justification.

Tata Communications' Response:

- The port charges should be **uniform across services**. There can be a **cost-based calculation** to determine the port charges for **IP-based interconnection**.
- We further submit that the port charges should be **revised based on actual costs**. Additionally, the Authority should mandate that **port charges and associated Bank Guarantees be implemented on a reciprocal basis**. We understand that the **centralized IP POIs** will also have a positive impact on this.
- Also, there is a need to review Port & Infrastructure Charges presently paid to BSNL. These charges are outdated and significantly higher than market rates. TRAI may consider a rational review in line with industry benchmarks to facilitate affordable interconnectivity.

Q30.Whether use of 'Erlang' as a unit of traffic in various interconnection regulations is sufficient and are the current procedures for demand estimation as provided in the Telecommunication Interconnection (Port Charges) Regulation 2001 and the TIR 2018 still effective and practical, in view of adoption of IP based interconnection?

a. **If yes, kindly provide justification in support of your response.**
b. **If no, kindly provide alternate metrics and demand estimation methods for IP-based interconnection along with detailed explanation.**

In either case, kindly provide suitable diagrammatic representation.

Tata Communications' Response:

No, the use of Erlang as the sole unit of traffic and the current Erlang-based demand estimation procedures are not sufficient, effective, or practical for dimensioning IP-based interconnection. Erlang models rely on the fundamental assumption of continuous occupancy of a dedicated channel for the duration of a call. This aligns with circuit-switched TDM networks. IP-based interconnection is packet-switched, where resources are shared dynamically, and traffic is inherently bursty. A continuous occupancy model (Erlang) does not accurately represent this dynamic sharing.

Further, Port charges and demand estimation methods should reflect that IP interconnection is scalable, virtualized, and not port-limited; thus, legacy concepts (E1s, physical ports) should not apply to non-access service providers.

Q31. Should the current provisions for submission, inspection and getting copies of interconnection agreements under 'The Register of Interconnect Agreements Regulations, 1999' using floppy disks and print copies be dispensed with and be made online?

- **a. If yes, what changes do you suggest for the online process, timelines, related charges and any other aspect?**
- **b. If not, kindly provide justification.**

Tata Communications' Response:

Yes, the current provisions for submission, inspection and getting copies of interconnection agreements under 'The Register of Interconnect Agreements Regulations, 1999' using floppy disks and print copies be dispensed with and be made online. The floppy-disk and paper-based filing system is archaic and inefficient

Tata Communications supports full digital submission, inspection, and reporting where applicable. We suggest moving all interconnect agreements and related filings to an online portal, where signed agreement files (e.g. PDFs) can be uploaded within a given deadline. The TRAI portal can automatically log timestamps, eliminating paper handling.

Q32. Is there a need to incorporate provisions for financial disincentives in interconnection regulations to deter non-compliance? If yes, kindly provide specific scenarios and mention the concerned regulations, where financial disincentives would be applicable, along with their quantification.
Kindly justify your response.

Tata Communications' Response:

We are of the view that introducing additional financial disincentives (FD) is unnecessary in a market that has already reached a high level of maturity. The focus should instead be on ensuring that regulatory requirements are balanced, transparent, and practically enforceable so that compliance is achieved without relying on punitive measures. Moreover, the *Telecommunication Interconnection Regulations, 2018* already contain provisions related to financial disincentives. In light of this, we do not see any justification for expanding or adding further FD mechanisms.

Q33. What should be the mechanism and timelines for transition of existing interconnection agreements between the service providers to the new regulatory framework that will emerge from this consultation process?
Kindly provide detailed response with justification.

Tata Communications' Response:

- The mechanism and timelines for transition of existing interconnection agreements between the service providers to the new regulatory framework must be a phased and structured transition.
- Where changes affect voice operators, TRAI should adopt a 12–18 month phased transition.
- ISPs should be exempt from transitions related to PSTN/PLMN interconnections.
- ISPs should only need to report interconnects involving licensed TSPs, not global or domestic peering arrangements.

Q34. What should be the interconnection framework for satellite-based telecommunications networks with other telecom networks? Further, whether the interconnection frameworks for MSS and FSS satellite-based telecommunications networks should be distinct? Please provide your response along with end-to-end diagrammatic representation and justification in respect of the following:

  a. **Satellite - Satellite network interconnection**
  b. **Satellite - PLMN interconnection**
  c. **Satellite - PSTN interconnection**

Tata Communications' Response:

The interconnection framework for satellite-based telecommunications services with other telecom networks should be based on seamless integration at the network level, using standardized Points of Interconnect (PoIs) that allow satellite services to function. Satellite networks should interconnect at IP exchange points, not legacy POIs.

ISPs must not be subjected to satellite-specific interconnection charges or regulatory burdens.

Q35. Are there any specific regulatory models from other countries that have successfully addressed interconnection related issues and challenges which can be adapted in the Indian telecom sector? If yes, kindly provide details of such international best practices.

Tata Communications' Response:

It is recommended that TRAI should align with global standards such as:

- FCC and Ofcom: light-touch regulation for internet interconnection.
- ETNO/GSMA IPX models: for voice, not general internet.
- EU BEREC guidelines: peering/transit remain commercial.

Q36. Kindly mention any other challenges or concerns related to the regulations being reviewed in this consultation paper.

Tata Communications' Response:

- NSO-VNO interconnection framework: As per the existing licensing framework, NSO has not been mandated to provide time bound access to its VNO and same has been left to the mutual agreement between an NSO and a VNO. However, this present framework of VNO-NSO arrangement has not taken off especially in the access services segment. Therefore, there is need for TRAI to play a role in the NSO-VNO interconnection framework by defining time bound access, to enable VNO ecosystem so that VNOs can bring more innovative products and services to the consumers and contribute further in the market expansion.

- Definition of Interconnection for International Toll-Free Services between ILDOs and Access Operators should be determined to be in line with ILD Termination traffic interconnection points. Apply termination charges for International Toll-Free services at the interconnection point in line with IUC for ILD termination traffic.
- For Mobile Termination – incidence of cost of transit if handed over within the same circles should be removed
- No need to cover the following aspects under Interconnection regulatory framework:
    - Peering/transit markets.
    - No burden from voice-network compliance imposed on ISPs.
    - OTT communication separation from PSTN interconnection rules.