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TELECOM REGULATORY AUTHORITY OF INDIA
NOTIFICATION

New Delhi, 2nd November, 2026

No. RG-1/(1)/2025-NSL-I.--- In exercise of the powers conferred upon it under section 36, read with sub-clauses (ii), (iii) and (iv) of clause (b) of sub-section (1) of section 11, of the Telecom Regulatory Authority of India Act, 1997 (24 of 1997), the Telecom Regulatory Authority of India hereby makes the following regulations further to amend the Telecommunication Interconnection Regulations, 2018 (1 of 2018), namely:-

THE TELECOMMUNICATION INTERCONNECTION (THIRD AMENDMENT) REGULATIONS, 2026
(8 of 2026)

1. (1) These regulations may be called the Telecommunication Interconnection (Third Amendment) Regulations, 2026.

(2) They shall come into force from 1st January, 2027.

2. In regulation 2 of the Telecommunication Interconnection Regulations, 2018 (hereinafter referred to as the principal regulations),--

(a) after clause (1), the following clause shall be inserted, namely:-
"(1A) "authorisation" means authorisation as defined under the Telecommunications Act, 2023;";

(b) in clause (6), after the words "termination of the calls", the words "and short message service" shall be inserted;

(c) after clause (7), the following clause shall be inserted, namely:-
"(7A) "minutes of usage" or "MoUs" means the aggregate duration, expressed in minutes, of voice calls handed over and taken over at a point of interconnection;";

(d) in clause (8), in the bracket, after the words "License Agreement", the word and symbol "/Authorisation" shall be inserted;

(e) for clause (9), the following clause shall be substituted, namely:-
"(9) "port" means a termination point on an equipment or a distribution frame that provides a point of access or interconnection for the exchange of traffic between two interconnecting telecommunication networks, enabling ingress and egress of such traffic and shall be -
(i) an E1 port, with a bandwidth of 2.048 Mbps; or
(ii) an IP port, with bandwidth expressed in Mbps or Gbps;";

3. In regulation 4 of the principal regulations, --

(a) in sub-regulation (1), in clause (a), after the word "agreement", the words "or authorisation, as applicable" shall be inserted;

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(b) in sub-regulation (3), after the words "the other service provider", the words "and the two service providers shall, through mutual agreement, enter into the interconnection agreement within the period specified in regulation 3" shall be inserted.

4. In regulation 5 of the principal regulations, --

(a) in sub-regulation (2), in clause (a), for the words "for a period of six months", the words "for a period of twelve months" shall be substituted;

(b) in sub-regulation (2), in clause (c), for the words "six month.", the words "twelve months:" shall be substituted;

(c) in sub-regulation (2), after clause (c), the following proviso shall be inserted, namely:-
"Provided that, in respect of a bank guarantee furnished under clause (a) before the 1st January, 2027, the next determination under this sub-regulation shall be made on the expiry of such bank guarantee."

5. In regulation 6 of the principal regulations, in sub-regulation (3), in the proviso, after the words "which were applicable to them before the 1st February, 2018", the words ", subject to migration or closure of such ports in accordance with regulation 9A and regulation 9B, as applicable" shall be inserted.

6. In regulation 7 of the principal regulations, for the words "number of ports", the words "capacity of IP ports" shall be substituted.

7. In regulation 8 of the principal regulations, in sub-regulation (2), --

(a) for the words "additional ports", the words "additional ports or additional capacity of ports" shall be substituted;

(b) after the words "schedule II to these regulations", the words "for E1/TDM-based interconnection and schedule-III to these regulations for IP-based interconnection" shall be inserted;

(c) in the proviso to sub-regulation (2), for the words "additional ports", the words "additional ports or additional capacity of ports," shall be substituted.

8. In regulation 9 of the principal regulations, --

(a) for the existing heading, the following heading shall be substituted, namely:-
"Framework for interconnection";

(b) in sub-regulation (6), after the existing proviso, the following proviso shall be inserted, namely:-
"Provided further that the ports provisioned under this sub-regulation shall be subject to the closure and migration requirements specified in regulation 9A and regulation 9B, as applicable."

9. For regulation 9A of the principal regulations, the following regulation shall be substituted, namely:-

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"9A. Level of interconnection for calls between PSTN and PSTN or between PLMN and PSTN or between PLMN and PLMN or between PSTN and NLD network or between PLMN and NLD network.—(1) The interconnection provider and the interconnection seeker may interconnect for handing over or taking over the telecommunication traffic at any mutually agreed location.

(2) In case the interconnection provider and the interconnection seeker fail to come to an agreement under sub-regulation (1), the location of Points of Interconnection (POI), for calls between PSTN and PSTN or between PLMN and PSTN or between PLMN and PLMN or between PSTN and NLD network or between PLMN and NLD network, shall be at the Licensed Service Area (LSA) or Service Area level, as applicable:

Provided that the POIs, for calls between PSTN and PSTN or between PLMN and PSTN or between PLMN and PLMN or between PSTN and NLD network or between PLMN and NLD network, at one additional location within LSA or service area may also be established based on mutual agreement between the interconnection provider and the interconnection seeker:

Provided further that the interconnected service providers shall close the existing POIs at the LDCA or SDCA level within a period of three years from the 1st January, 2027, as detailed hereunder:-

(a) by the end of the first year from the 1st January, 2027, the average monthly MoUs carried through LDCA or SDCA level POIs of the LSA during the three complete calendar months immediately preceding the completion of the first year from the 1st January, 2027 shall not exceed eighty percent of the average monthly MoUs carried through such POIs during the three complete calendar months immediately preceding the 1st January, 2027;

(b) by the end of the second year from the 1st January, 2027, the average monthly MoUs carried through LDCA or SDCA level POIs of the LSA during the three complete calendar months immediately preceding the completion of the second year from the 1st January, 2027 shall not exceed forty-five percent of the average monthly MoUs carried through such POIs during the three complete calendar months immediately preceding the 1st January, 2027; and

(c) by the end of the third year from the 1st January, 2027, all existing LDCA or SDCA level POIs of the LSA shall be closed and no MoUs shall be carried through such POIs and all telecommunication traffic shall be handed over or taken over at the LSA or Service Area level, as applicable:

Provided also that no infrastructure charges or port charges shall be payable by one service provider to another service provider in respect of SDCA/LDCA-level POI(s), after the expiry of three years from the 1st January, 2027."

10. After regulation 9A of the principal regulations, the following regulation shall be inserted, namely:-

"**9B. IP-based Interconnection.**—(1) The service providers shall establish IP-based interconnection for all interconnections established on or after the 1st January, 2027.

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(2) The service providers shall migrate all POIs working on E1/TDM-based interconnection to IP-based interconnection within a period of three years from the 1st January, 2027, as detailed hereunder:-

(a) by the end of the first year from the 1st January, 2027, the average monthly MoUs carried through E1/TDM-based interconnections at POIs of the LSA during the three complete calendar months immediately preceding the completion of the first year from the 1st January, 2027 shall not exceed eighty percent of the average monthly MoUs carried through E1/TDM-based interconnections at POIs of the LSA during the three complete calendar months immediately preceding the 1st January, 2027;

(b) by the end of the second year from the 1st January, 2027, the average monthly MoUs carried through E1/TDM-based interconnections at POIs of the LSA during the three complete calendar months immediately preceding the completion of the second year from the 1st January, 2027 shall not exceed forty-five percent of the average monthly MoUs carried through E1/TDM-based interconnections at POIs of the LSA during the three complete calendar months immediately preceding the 1st January, 2027; and

(c) by the end of the third year from the 1st January, 2027, all existing E1/TDM-based interconnections at POIs of the LSA shall be migrated to IP-based interconnection and no MoUs shall be carried through E1/TDM-based interconnections at POIs of the LSA and all telecommunication traffic shall be handed over or taken over through IP-based interconnection."

11. The Chapter V of the principal regulations shall be renamed as "INTERCONNECTION CHARGES AND DELAYED PAYMENT CHARGES".

12. After regulation 10 of the principal regulations, the following regulation shall be inserted, namely:-

"**10A. Interest on delayed payment of interconnection-related charges.—** If a service provider fails to pay the interconnection charges or the interconnection usage charges, as the case may be, within the time specified in the interconnection agreement, it shall be liable to pay interest on the outstanding amount and the rate of such interest may be mutually agreed by the service providers: Provided that the interest payable under this regulation shall not be more than two percent (2%) above the one-year Marginal Cost of Funds-based Lending Rate (MCLR) of the State Bank of India prevailing as on the beginning of the Financial Year in which the default occurs."

13. The Chapter VI of the principal regulations shall be renamed as "DISCONNECTION AND SURRENDER OF POIs".

14. In regulation 11 of the principal regulations, --

(a) in the proviso, for the word "Licensor", the words "Central Government" shall be substituted;

(b) after the proviso, the following explanation shall be inserted, namely:-

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"Explanation.— For the purposes of this regulation,— Disconnection of a POI is a step, resulting in stoppage of exchange of traffic at the POI, taken by a service provider for reasons attributable to the other service provider, in exceptional circumstances arising out of differences between them, and shall be carried out only after communicating reasons to the other service provider through a show-cause notice and on expiry of the notice periods specified in regulation 11."

15. After regulation 11 of the principal regulations, the following regulation shall be inserted, namely:-

"**11A. Procedure for surrender of POI**.— (1) A service provider who intends to surrender POI shall give the notice of ninety days to the other service provider with reasons for such surrender:

Provided that a POI may be surrendered only after the expiry of twelve months from the date of its commissioning.

(2) On receipt of notice under sub-regulation (1), both the service providers shall make necessary arrangements for rerouting of traffic to alternate POIs:

Provided that no interconnection charges for the POI or ports shall be payable after expiry of the notice period or the period specified in the proviso to sub-regulation (1), whichever is later.

Explanation.— For the purposes of this regulation,— Surrender of a POI is the voluntary closure of the POI by a service provider for its own operational requirements, *inter alia*, on account of reduction in traffic, withdrawal of services from an area or re-routing of traffic, and not for reasons attributable to the other service provider, and shall be carried out only after the expiry of the minimum period from the date of commissioning of the POI and the notice period specified in regulation 11A."

16. After Chapter VI of the principal regulations, the following Chapter and regulation shall be inserted, namely:-

"CHAPTER VIA

REPORTING

11B. Reporting requirements.— (1) The service providers having entered into interconnection agreements shall, in respect of closure of SDCA/LDCA-level POIs and shifting of traffic to LSA-level POIs, jointly prepare and submit to the Authority, -

(a) LSA-wise and POI-wise plan for closure of SDCA/LDCA-level POIs and shifting of traffic to LSA-level POIs, in compliance with the provisions of regulation 9A, within three months from the 1st January, 2027;

(b) after three months from the 1st January, 2027, monthly progress report and cumulative status of closure of SDCA/LDCA-level POIs and shifting of traffic to LSA-level POIs, within fifteen days from the end of each month or as may be directed by the Authority;

(c) compliance reports within thirty days from the end of each milestone period, as specified in regulation 9A.

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(2) The service providers having entered into interconnection agreements shall, in respect of migration to IP-based Interconnection, jointly prepare and submit to the Authority, -

(a) an LSA-wise and POI-wise migration plan for migration from E1/TDM-based interconnection to IP-based interconnection, in compliance with regulation 9B, within three months from the 1st January, 2027;

(b) after three months from the 1st January, 2027, monthly and cumulative progress reports of migration from E1/TDM-based interconnection to IP-based interconnection, within fifteen days from the end of each month or as may be directed by the Authority;

(c) compliance reports within thirty days from the end of each milestone period, as specified in regulation 9B.

(3) The service providers having entered into interconnection agreements shall jointly submit to the Authority the details of all new interconnections established after the 1st January, 2027, LSA-wise and POI-wise, within thirty days of their establishment:

Provided that, where any report required to be jointly submitted under sub-regulation (1), sub-regulation (2) or sub-regulation (3) of this regulation cannot be submitted jointly for any reason, either service provider may, within the time specified for such submission, submit to the Authority its individual report, along with the reasons for the non-submission of the joint report."

17. For regulation 12 of the principal regulations, the following regulation shall be substituted, namely:-

"12. Consequences for the contravention of the provisions of these regulations.—

(1) If any service provider contravenes the provisions of regulation 3, sub-regulation (2) of regulation 4, regulation 9, regulation 9A, regulation 9B, regulation 11, regulation 11A or regulation 11B, it shall, without prejudice to any penalty which may be imposed under the terms and conditions of its licence or authorisation or any other action that may be taken under any Act, or the rules or regulations or orders made, or directions issued, thereunder, be liable to pay an amount, by way of financial disincentive as provided in the Schedule-IV to these regulations.

(2) No order for payment of financial disincentive shall be made by the Authority unless the service provider has been given a reasonable opportunity of representing against the contravention observed by the Authority.

(3) The Authority may decide not to impose any financial disincentive, or impose a lower amount of financial disincentive, for reasons to be recorded in writing:

Provided that, where the amount or limit of financial disincentive specified under the regulations as amended by the Telecommunication Interconnection (Third Amendment) Regulations, 2026, is lower than that applicable immediately before coming into force of such amendment, the Authority

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may, in respect of any contravention committed or liability incurred before coming into force of the Telecommunication Interconnection (Third Amendment) Regulations, 2026, impose the financial disincentive up to the amount or limit so provided under the regulations as amended by the Telecommunication Interconnection (Third Amendment) Regulations, 2026."

18. After regulation 12 of the principal regulations, the following regulation shall be inserted, namely:-

"12A. Payment of financial disincentives.— (1) The amount payable by way of financial disincentive under these regulations shall be remitted to such head of account as may be specified by the Authority.

(2) If the service provider fails to make payment of financial disincentive under regulation 12, within a period of twenty-one days from the date of issue of the order for payment of financial disincentive or as stipulated in the order for payment of financial disincentive, it shall be liable to pay simple interest at a rate which shall be two percent (2%) above the one-year Marginal Cost of Funds-based Lending Rate (MCLR) of the State Bank of India prevailing as on the beginning of the Financial Year in which the last day of the stipulated period falls.

Explanation.— For the purposes of this regulation, a part of a month shall be reckoned as a full month for calculation of interest and a month shall be reckoned as an English calendar month."

19. After Chapter VII of the principal regulations, the following chapters and regulations shall be inserted, namely:-

"CHAPTER VIIA
REVIEW

12B. Review.— The provisions of these regulations may be reviewed by the Authority as and when required.

CHAPTER VIIB
INTERPRETATION

12C. Removal of Difficulties.— In order to remove any difficulties in the interpretation or application of the provisions of these regulations, the Authority may issue necessary clarifications or guidelines, which shall be final and binding."

20 For the Schedule I to the principal regulations, the following Schedule shall be substituted, namely:-

"Schedule-I

Bank guarantee for POI(s)

(See regulation 5)

S. No.	Item	Value (in Rs.)
1	Ceiling on bank guarantee for POIs (in Rs.)	8,00,000 multiplied by interconnection usage charge per minute multiplied by capacity of the interconnection in Mbps divided by 2.048.

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"

21 After Schedule II to the principal regulations, the following Schedule shall be inserted, namely:-

"Schedule-III

(See regulation 8)

For a given IP interconnection at a POI, the maximum call handling capacity shall be determined based on the concurrent session handling capability and link bandwidth at the POI, sufficient to maintain the desired Quality of Service (QoS), as per the relevant TRAI regulations.

Sample procedure for augmentation of IP ports for maximum call handling capacity at the POI is illustrated below:-

Considering that Service Provider A has an IP interconnection with Service Provider B for its outgoing traffic, if the projected outgoing traffic of Service Provider A, at the end of 60 days from the date of placing the request, is estimated to reach or exceed 85% of either the interconnection's concurrent session handling capacity or its interconnection bandwidth capacity, Service Provider A may request an augmentation of the interconnection's session handling capacity and bandwidth capacity, as applicable, to reduce utilization to below 75%."

22 After Schedule-III so inserted, the following Schedule shall be inserted, namely:-

"Schedule-IV

(See regulation 12)

Sl. No.	**Contravention under the regulation**	**Amount of financial disincentive for each instance of contravention**
1.	Contravention of regulation 11B	(a) Up to fifty thousand rupees per day for delay up to fifteen days; and (b) Up to one lakh rupees for each day of delay beyond fifteen days: Provided that the financial disincentive under item (a) and item (b) above shall not exceed rupees twenty-five lakh per Service Area for each instance of contravention.
2.	Contravention of regulation 3, sub-regulation (2) of regulation 4, regulation 9, regulation 9A, regulation 9B, regulation 11 or regulation 11A	(a) Up to one lakh rupees per day for delay up to fifteen days; and (b) Up to two lakh rupees for each day of delay beyond fifteen days:

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		Provided that the financial disincentive under item (a) and item (b) above shall not exceed rupees one crore per Service Area for each instance of contravention.

"

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Note 1: The principal regulations were published in the Gazette of India, Extraordinary, part III, section 4 vide notification No. 10-10/2016-BB&PA dated 1st January, 2018 and amended vide:

(i) Notification No. 10-10/2016-BB&PA dated 5th July, 2018 (4 of 2018) – Ist Amendment

(ii) Notification No. 409-3/2018-NSL-I dated 10th July, 2020 (6 of 2020) – IInd Amendment

Note 2: The Explanatory Memorandum explains the objects and reasons of 'The Telecommunication Interconnection (Third Amendment) Regulations, 2026.'

Explanatory Memorandum

to

The Telecommunication Interconnection (Third Amendment) Regulations, 2026

1. Introduction

1.1. Interconnection in telecom refers to commercial and technical arrangements that allow authorized entities or licensees to connect their telecommunication equipment, networks, and services, enabling their users to access the users, services, and networks of other authorized entities or licensees.

1.2. The Telecommunication Interconnection Regulations, 2018 were notified on 1st January 2018 and came into force on 1st February 2018. These regulations cover some of the important aspects of interconnection, e.g., interconnection agreement, provisioning of initial interconnection and augmentation of points of interconnection (POIs), interconnection charges, disconnection of POIs, and financial disincentives on interconnection matters. These regulations were subsequently amended on 5th July 2018 and 10th July 2020. The Authority now notifies 'The Telecommunication Interconnection (Third Amendment) Regulations, 2026'. This Explanatory Memorandum sets out the background, rationale and considerations underlying this amendment, to enable stakeholders to understand the Authority's approach in formulating these regulations.

2. The present exercise to review the regulatory framework for interconnection in India

2.1. The Authority issued a pre-consultation paper dated 3rd April 2025 and subsequently issued a consultation paper on 'Review of the existing TRAI Regulations on Interconnection matters' on 10th November 2025 to seek the views of the stakeholders on various aspects of these regulations. The stakeholders were requested to submit their written comments and counter-comments by the extended last date of 15th December 2025 and 29th December 2025 respectively. An open house discussion was held with the stakeholders on 28th January 2026. The issues raised in the consultation paper, submissions of stakeholders through comments and counter comments and during the open house discussion, have been examined in the succeeding paragraphs.

3. Analysis of the issues related to interconnection

3.1. In the consultation paper dated 10th November 2025, the Authority sought the views from the stakeholders on the various issues related to interconnection. The relevant issues which have been discussed in this explanatory memorandum are as follows:

a. Examination of existing levels of interconnection and IP-based interconnection
b. Review of process for provisioning and augmentation of ports at POIs

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c. Adequacy of Erlang as a traffic unit and its application for estimation of capacity augmentation for IP-based interconnection
d. Review of existing procedure for disconnection and surrender of POIs
e. Provision of bank guarantee
f. Procedures for addressing delays in payment of interconnection related charges
g. Necessary financial disincentive framework.

A large number of views were received from stakeholders in response to the consultation process. The submissions received from stakeholders have been summarized in the subsequent sections followed by the analysis and conclusions of the Authority on these issues.

3.2. **Examination of existing levels of interconnection and migration to IP-based interconnection**

3.2.1. The existing licensing framework, regulatory framework and the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 under the Telecommunications Act, 2023, issued by the Central Government in respect of these issues are, *inter alia,* as follows:

3.2.2. Chapter IV of the Unified License issued by the Department of Telecommunications contains, *inter alia*, the following provisions relating to the network interconnection:

"27.3 Interconnection between the networks of different Licensees for carrying circuit switched traffic shall be as per national standards of CCS No.7 and for carrying IP based traffic as per Telecom Engineering Centre (TEC) standards as amended from time to time by Telecom Engineering Centre (TEC) and also subject to technical feasibility and technical integrity of the Networks and shall be within the overall framework of interconnection regulations/ directions/ orders issued by the TRAI/ Licensor from time to time. For inter-networking between circuit switched and IP based network, the Licensee shall install Media Gateway Switch. Further, the Licensor may direct the LICENSEE to adopt any other technical standards issued by TEC on interconnection related issues."

3.2.3. The Telecommunication Interconnection Regulations, 2018, as amended from time to time, provide for the level of interconnection for PSTN to PSTN and PSTN to NLD network connectivity as follows:

"9A. Level of interconnection for PSTN to PSTN connectivity:-----
(1) Within a service area, the location of POI, for calls between PSTN and PSTN or between PSTN and NLD network, shall be at such place as may be mutually agreed between the interconnection provider and the interconnection seeker.

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(2) In case the interconnection provider and the interconnection seeker fail to agree under sub-regulation (1), the location of POI, for calls between PSTN and PSTN or between PSTN and NLD network, shall be at LDCC:

Provided that carriage charge for carriage of calls from LDCC to SDCC and vice versa, as applicable, shall be paid by the interconnection seeker to the interconnection provider:

Provided further that the existing POIs at the SDCC level, for calls between PSTN and PSTN or between PSTN and NLD network, shall remain in operation for a period of at least five years or till such time the interconnected service providers mutually decide to close such POIs, whichever is earlier:

Provided also that the existing POI at the SDCC level, for calls between PSTN and PSTN or between PSTN and NLD network, can be closed if the services of either of the interconnected service providers are discontinued in that SDCA."

3.2.4. The Central Government vide notification dated 23rd June 2026 has issued the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 under the Telecommunications Act, 2023, wherein sub-rule (2) of rule 32, *inter alia,* provides the following:

"(2) The network service operator while undertaking interconnection or peering with the telecommunication network of any other network service operator or network service operator licensee shall ensure—

(a) that the transmission systems for interconnection or peering meet the requirements under section 19 of the Act in respect of standards and interface requirements;

(b) that interconnection and peering, as required, is established on Internet Protocol interface for carrying Internet Protocol-based traffic, as per the standards, including those notified under section 19 of the Act:

Provided that the network service operator shall convert circuit switched traffic to Internet Protocol based traffic before sending circuit switched traffic to the telecommunication networks of another network service operator or network service operator licensee;

(c) establishment and maintenance of one or more points of interconnection and peering of sufficient capacity as are reasonably required for transmission and reception of messages in conformity with the standards and conformity assessment measures as may be notified by the Central Government under section 19 of the Act; and

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(d) that interconnection and peering is technically compatible and effective.

(3) The network service operator shall provide and update the details of interconnection and peering undertaken with any other network service operator or network service operator licensee to the Central Government on the portal.

(4) The network service operator that has an agreement for interconnection or peering with other network service operator or network service operator licensee, whose authorisation or license, is the subject of revocation, surrender or expiry, shall disconnect any interconnection or peering, and where it has provided any telecommunication resource, withdraw such telecommunication resources on the effective date of revocation, surrender or expiry."

3.2.5. The aforementioned Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 under sub-rule (2) of the rule 67 in 'Part A: Unified Service Authorisation' of Chapter - VIII, *inter alia*, also provides the following:

*"**67. Technical and operating conditions. -***

... (2) Every network service operator may interconnect its telecommunication network with the telecommunication network of a network service operator licensee or any other network service operator that holds any authorisation under these rules, for handing or taking over the telecommunication traffic at any mutually agreed location, failing which, the interconnection shall take place at the point of interconnection."

3.2.6. During the consultation process stakeholders were invited to provide their views on whether the level of interconnection for PSTN-to-PSTN, PLMN-to-PSTN, and PSTN-to-PLMN networks should be specified at the Licensed Service Area (LSA) or Service Area level. The stakeholders were also requested to comment on: If LSA level interconnection is allowed, all existing points of interconnection (POIs) at the Long-Distance Charging Area (LDCA) or Short-Distance Charging Area (SDCA) levels should be migrated to the LSA level, along with justification for their views.

3.2.7. The next question sought stakeholders' views on: For PSTN-to-PSTN, PLMN-to-PSTN, PSTN-to-PLMN and PLMN-to-PLMN interconnections, whether interconnection should be allowed at a level other than the LSA level, based on mutual agreement between them, along with justification for their responses.

3.2.8. Based on the answers to the previous questions, the stakeholders were also asked to indicate what changes, if any, are required in the level of interconnection / points of traffic handover as provided in the Telecommunication Interconnection Regulations, 2018, along with justification.

3.2.9. The consultation paper also sought stakeholders' views on whether IP-based interconnection should be mandated for all new interconnections within the regulatory framework, with justification. In

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addition, stakeholders were asked whether service providers should be required to migrate existing TDM-based E1 interconnections to IP-based interconnections within a specified period. If respondents supported such a mandate, they were requested to suggest appropriate timelines for the transition and provide justification for their responses.

a) Views of stakeholders on existing levels of interconnection and IP-based interconnection

Existing levels of interconnection for PSTN-PSTN, PLMN-PSTN, PSTN-PLMN, and PLMN-PLMN connectivity:

3.2.10. Many of the stakeholders submitted that the Authority should prescribe LSA level interconnection as the default interconnect level for PSTN-PSTN, PLMN-PSTN, and PSTN-PLMN. Stakeholders further pointed out that PLMN-to-PLMN POIs are already established at the LSA level. They submitted that most service providers have deployed technologically advanced IP-based core networks which are designed to handle traffic centrally for a large area and can handle the traffic of an entire LSA. This makes SDCA/LDCA based traffic routing and interconnection redundant and inefficient.

3.2.11. A few stakeholders argued that the mandated five-year timeline for phasing out the SDCA-based structure has already elapsed, as existing POIs at the SDCA level were permitted to remain operational only until 9th July 2025, unless mutually closed earlier. Therefore, these stakeholders suggested that there is a need to expeditiously move towards LSA-based interconnection instead of adopting the intermediate step of LDCA-based interconnection.

3.2.12. Some stakeholders stated that the TRAI's 'Revision of National Numbering Plan (NNP) recommendations 2025' also require a review of the Telecommunication Interconnection Regulations, 2018, as amended from time to time, to address the numbering resource constraints. They suggested shifting POIs from the LDCA level to the LSA level. One stakeholder quoted an extract from TRAI's 'Revision of NNP recommendations 2025' as follows:

"...10-digit closed numbering scheme may require establishing the Point of Interconnection (POI) between TSPs for fixed-line services at the Licensed Service Area (LSA) level. The shifting of the inter-TSP POIs at LSA level, fixed-line would require substantial changes to the network routing design across all network nodes in India. Consequently, the Authority opines that the extant Telecommunication Interconnection Regulations (Second Amendment) 2020 (TIRs) governing POIs needs to be reviewed for shifting inter-TSP POIs at the LSA level instead of the LDCA level to facilitate a smooth transition..."

3.2.13. Another stakeholder pointed out that the transition to the LSA level will consolidate POIs to deliver clear and tangible consumer benefits such as better call quality, and fewer call drops.

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Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

3.2.14. In support of the above position, some stakeholders submitted that the Authority should prescribe migration of existing POIs from lower levels to the LSA level within a specified timeline and in a phased manner. In this regard, one service provider stated that as a deterrent to the intentional blocking of this migration, the Authority should mandate that all interconnection related costs for both parties be borne by the delaying service provider.

3.2.15. Some stakeholders suggested that the TRAI should allow the unification of POIs for all types of traffic at an above LSA level based on mutual agreement between service providers. Thus, the Regulations should facilitate centralized and unified POIs at an above LSA level as well.

3.2.16. Some stakeholders stated that in addition to the LSA level interconnection, which should be mandated, interconnection at smaller location by mutual agreement should be allowed. Conversely, other stakeholders argued that allowing such mutually agreed alternatives such as interconnection at the SDCA level or LDCA level would lead to fragmentation and is also prone to coercion by the other service provider. They highlighted that dependence on "mutual agreement" carries a substantial risk of exploitation by such service provider and could result in delays in migration and could force other service providers to continue with inefficient legacy interconnections.

3.2.17. A few stakeholders suggested that there may be cases where service providers may prefer to interconnect at multiple places in a single LSA for the purpose of handling traffic or enhancing redundancy or load balancing. Therefore, service providers should also be allowed to interconnect at an additional location within LSA based on mutual agreement.

3.2.18. Regarding the timelines for migration from SDCA/LDCA levels to LSA-level POIs, one of the stakeholders stated that it would need a minimum of five years to migrate its interconnection points from the current SDCA/LDCA level to higher levels above the LSA level. If the LSA level connectivity is made mandatory, then this service provider demanded that it should get compensation for the costs incurred in maintaining the infrastructure at the LDCA level. This cost is the fixed cost based on the number of LDCAs served by each LSA. This revenue protection could be provided for five years in terms of total charges, which would have been levied for interconnection at LDCAs for any service provider opting to shift its POI from LDCAs to the LSA level.

3.2.19. However, some other stakeholders opposed this position of the above service provider arguing that the LDCA level interconnection has been in operation for a long period and has been extensively used by all operators and thus, the said service provider has already fully recovered its capital costs for LDCA-level infrastructure.

3.2.20. One stakeholder has proposed a two-phase migration from the existing SDCA/LDCA levels to LSA-level POIs, applicable uniformly across PSTN-PSTN, PLMN-PSTN, and PSTN-PLMN traffic. In the first phase, 50% of traffic would be shifted to LSA-level POIs within one year of the issuance

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भारतीय दूरसंचार विनियामक प्राधिकरण
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नई दिल्ली/New Delhi

of the Regulation and the remaining 50% would be shifted within two years of the issuance of the Regulation in the second phase. Some stakeholders submitted that the levels of interconnection should be upgraded to the LSA level on an immediate basis and that the level of interconnection should be further upgraded beyond the LSA level. They also submitted that the Authority should consider centralized and unified POIs for which a glide path should be provided.

IP-based interconnection:

3.2.21. Regarding the migration from E1/TDM-based interconnection to IP-based interconnection, most of the stakeholders are of the view that TRAI should mandate a full migration to IP-based interconnection with centralized POIs at the LSA level.

3.2.22. Many stakeholders have highlighted the need for adoption of the IP-based, packet-switched networks for 4G, 5G, VoLTE, or VoNR by service providers and the replacement of E1/TDM circuit-switched systems. Many service providers have already migrated to IP-based mobile networks and IP-TAX/NGN switches within their own networks. However, for the purpose of interconnection among service providers, E1/TDM-based interconnections are still in use. This dual TDM-IP network architecture causes interoperability issues, transcoding delays, inefficient capacity utilization, higher capital and operational costs and slower augmentations. TDM degrades inter-operator call quality. IP-based networks deliver end-to-end VoLTE/VoNR calls. This would give better call quality experience for calls between different service providers, currently available mainly within service providers' IP-based networks.

3.2.23. Further, some stakeholders have indicated that TDM-based equipment has become obsolete, is no longer available in the market, and has reached end-of-life status. There is difficulty in getting the OEMs' support as well as manpower required to manage this equipment. A single soft switch can serve the entire LSA, thereby eliminating the need for multiple TDM switches and can efficiently handle the traffic at LSA level.

3.2.24. One of the stakeholders has suggested that after six months of issuance of the Regulations, all new POIs of existing service providers and new entrants as well as augmentation of existing POIs should be done only on IP interconnection. It has further suggested a three-phase plan to fully replace E1/TDM-based interconnections with IP-based interconnections. Under phase-1, 10% of traffic should be migrated to IP-based interconnection within one year. Under phase 2, 50% migration to IP-based interconnection should be completed within 18 to 24 months. Under phase 3, full migration to IP-based interconnection and discontinuance of all E1/TDM-based interconnections within three years of issuance of Regulations. Another stakeholder has also suggested transition period of 3 to 4 years from regulation enactment, ending TDM-based interconnections. Most other stakeholders have also suggested to migrate existing E1/TDM-based interconnection to IP-based interconnection within prescribed timelines.

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भारतीय दूरसंचार विनियामक प्राधिकरण
Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

3.2.25. Another stakeholder has argued in favour of mandating IP-based interconnection, highlighting global migration trends. This stakeholder stated that one particular service provider, having upgraded its core network to IP based network and launched pan-India 4G services, is not supporting IP based interconnection, apparently to continue to charge private operators for POIs based on E1/TDM-based interconnection. It has also submitted for mandating inter-operator SMS communication using IP interconnection for service resiliency and technology evolution, noting that for SMS, private operators have already migrated to IP while one service provider continues to use TDM.

3.2.26. One consumer association suggested that IP interconnection should be mandated for all new interconnections to enable VoLTE/VoNR, HD voice, lower costs, and future services like 5G. Existing TDM E1 links require mandated migration via a 48-month phased plan.

3.2.27. Some stakeholders have also cited the regulatory practices being adopted by the regulators of other countries regarding migration to IP-based interconnection. As per one of the stakeholders, Federal Communications Commission (FCC) of the United States is considering eliminating its legacy TDM interconnection obligations by 2028. Several other countries including Australia, Brazil, Canada, members of the European Union, Singapore and South Africa have already initiated or completed migration toward IP-based interconnection frameworks.

3.2.28. One stakeholder has stated that mandating IP-based interconnection is not required at present. IP-based interconnection is subject to the readiness and security of the service providers network for IP connectivity and it should be left to the mutual agreement between service providers as it requires investment by the service providers. This stakeholder has further submitted that E1/TDM-based interconnection should co-exist during the transition to IP-based interconnection as and when it starts for ensuring service continuity.

b) Analysis of the issues and views of the Authority on existing levels of interconnection and IP-based interconnection

Existing levels of interconnection for PSTN-PSTN, PLMN-PSTN, PLMN-PLMN, PSTN-PLMN, PSTN-NLD network, and PLMN-NLD network connectivity:

3.2.29. The Authority has carefully examined the views expressed by various stakeholders during the consultation process, existing licensing framework, regulatory framework and the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 under the Telecommunications Act, 2023, notified by the Central Government in respect of these issues. The Authority is of the view that the SDCA/LDCA-based interconnection framework for PSTN-PSTN, PLMN-PSTN, PSTN-PLMN, PSTN-NLD network, and PLMN-NLD network connectivity among various service providers, which was designed for circuit-switched networks, is not optimally aligned with the architecture and operational design of IP-based telecom networks.

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Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

IP-based interconnections are typically of much higher traffic carrying capacity and bandwidth, thereby allowing fewer points of interconnection, enhancing efficiency, optimizing manpower requirement and operational cost.

3.2.30. In order to address any possibility of intentional delay or coercion in the migration to LSA-level interconnection, as well as to mitigate the continued cost burden associated with legacy interconnections, it would not be appropriate for infrastructure charges and port charges to remain payable, for SDCA/LDCA-level POIs after the prescribed migration period to LSA-level interconnection.

3.2.31. It is also noted that continuation of SDCA/LDCA-level interconnection has implications for efficient utilization of numbering resources. The Authority also agrees that shifting traffic to LSA-level POIs would simplify routing and support more efficient management of scarce numbering resources.

3.2.32. From a consumer perspective, there is considerable merit in the view that the LSA-level interconnection for PSTN-PSTN, PLMN-PSTN, PSTN-PLMN, PSTN-NLD network, and PLMN-NLD network connectivity among various service providers would result in benefits, including improved call quality, lower latency, and enhanced service reliability. This is also consistent with the existing interconnection framework, as PLMN-to-PLMN POIs are already established at the LSA level. LSA-level interconnection would reduce the number of POI locations as well as potential points of failure, which in turn improves end-to-end call performance. These benefits provide public interest justification for moving away from multi-level interconnection arrangements.

3.2.33. With regard to the question of permitting interconnection at levels other than the LSA level, for example, having interconnection at a level lower than LSA level, i.e., LDCA or below level, with mutual agreement, the Authority has noted that modern telecom networks have centralized architecture in their core network design, call routing, and service logic. Further, in the modern IP-based telecom network traffic aggregation, switching and interconnection functions are no longer performed at individual SDCA or LDCA nodes, but at centralized core locations, which could be one of the LDCA locations, that typically serve the entire LSA. Consequently, the Authority is of the view that maintaining multiple interconnection points at lower hierarchical levels leads to duplication of infrastructure, avoidable costs, and operational inefficiencies without delivering commensurate benefits and hence, shall not be permitted. However, there is merit in the argument that in certain cases, service providers may require interconnection at multiple locations within a single LSA for the purposes of traffic management, redundancy enhancement, or load balancing. Therefore, the Authority agrees that service providers should also be allowed to interconnect at one additional location within the LSA based on mutual agreement.

3.2.34. Regarding the need for having interconnection at a level higher than LSA level with mutual agreement, the Authority is of the view that there should be flexibility for enabling a centralised

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नई दिल्ली/New Delhi

interconnection architecture with unified POIs catering to more than one LSA, if mutually agreed between the service providers.

3.2.35. Regarding the compensation sought by one service provider for closure of SDCA/LDCA-level POIs and shifting of traffic to LSA-level POI(s), in terms of number of LDCAs that an LSA would cater to, the Authority is of the view that interconnection charges have been applicable under the regulatory framework since 1999, *inter alia*, for SDCA/LDCA-level interconnections. The cost model underlying such charges has been designed to ensure recovery of the full investment on ports over a period of ten years. The recovery of cost has been worked out by spreading the capital expenditure over the useful life of the asset using the straight-line method of depreciation, along with provision for a reasonable return on capital through pre-tax weighted average cost of capital and an appropriate loading towards overheads. Accordingly, the annualised cost is adequate to cover capital cost, return on capital, and associated overheads within the prescribed period, thereby ensuring complete recovery of cost. Further, the Authority notes that the cost of maintaining infrastructure for interconnection at the SDCA/LDCA-level would cease once such interconnections are closed and traffic is shifted to LSA-level interconnection. In view of the above, no separate compensation is considered justified.

3.2.36. Accordingly, the following framework has been prescribed:

(1) The interconnection provider and the interconnection seeker may interconnect for handing over or taking over the telecommunication traffic at any mutually agreed location.

(2) In case the interconnection provider and the interconnection seeker fail to agree under sub-regulation (1), the location of POI, for calls between PSTN and PSTN or between PLMN and PSTN or between PLMN and PLMN or between PSTN and NLD network or between PLMN and NLD network, shall be at the Licensed Service Area (LSA) or Service Area level, as applicable:

Provided that the POIs, for calls between PSTN and PSTN or between PLMN and PSTN or between PLMN and PLMN or between PSTN and NLD network or between PLMN and NLD network, at one additional location within LSA or service area may also be established based on mutual agreement between the interconnection provider and the interconnection seeker.

Regulation has been prescribed for amendment accordingly.

Timelines for closure of SDCA/LDCA-level POIs and shifting of traffic to LSA-level POI(s)

3.2.37. Regarding timelines for setting LSA-level as the default level for POIs, all new POIs to be established as well as shifting traffic to LSA level POI from existing POIs at SDCA/LDCA-level, for PSTN-PSTN, PLMN-PSTN, PSTN-PLMN, PSTN-NLD network, and PLMN-NLD network connectivity, the Authority is of the view that timelines should neither be too short nor too long and

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भारतीय दूरसंचार विनियामक प्राधिकरण
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नई दिल्ली/New Delhi

change should be undertaken in phased manner. Timelines should be optimal enough to allow service providers to prepare and implement migration plans without disrupting their live traffic. Shorter timelines might not allow service providers to systematically plan and execute migration whereas longer timelines would deprive the telecom sector and consumers from reaping the benefits of POI migration to LSA level. The phased manner approach for this change would provide service providers with adequate time for network planning, routing modifications, billing systems, and align their interconnection agreements, if required. Having considered the preparatory work required and the comments of stakeholders, the Authority is of the view that a three-year timeline shall be optimum for the smooth shifting of traffic from existing POIs to the LSA-level POI.

3.2.38. The existing interconnections established at SDCA/LDCA level for PSTN-PSTN, PLMN-PSTN, PSTN-PLMN, PSTN-NLD network, and PLMN-NLD network connectivity shall be closed in a phased manner within a period of three years from the date of commencement of these regulations, i.e., 1st January, 2027 (hereinafter referred to as effective date). Such SDCA/LDCA-level POIs may be progressively decommissioned as and when the corresponding traffic is shifted to the LSA level POI. The LSA level POI should be maintained with sufficient capacity to handle the traffic that was previously carried through the SDCA/LDCA-level POIs of the same LSA.

3.2.39. In view of the preparatory activities and efforts required for migration of traffic from the existing SDCA/LDCA-level POIs to LSA-level POIs, including network planning, procurement and deployment of equipment and transmission resources, coordination between interconnected service providers, testing and commissioning of equipment, it is considered appropriate to prescribe phased year-wise migration milestones of 20%, 55% and 100%. A relatively lower migration target of 20% in the first year has been prescribed to provide sufficient time for preparatory activities and to enable service providers to gain experience in carrying out the migration without affecting the continuity of services. Based on the learnings from the initial phase and the equipment and processes put in place, the migration target has been increased to 55% in the second year and 100% in the third year. The higher targets in the subsequent years are intended to facilitate accelerated migration and ensure completion within the stipulated three-year period, while minimising the risk of operational or service disruptions during the transition. For the purpose of assessing compliance with these migration milestones, a residual traffic-based approach has been adopted. Accordingly, the average monthly MoUs carried through LDCA or SDCA-level POIs of the LSA shall not exceed 80%, 45% and 0%, respectively, of the reference level by the end of the first, second and third year from the effective date. The reference level has been defined as the average monthly MoUs carried through such POIs during the three complete calendar months immediately preceding the effective date. Adoption of a fixed reference level provides a common basis for assessment. Further, as traffic volumes may vary from month to month due to seasonal factors and other variations, the average monthly MoUs of the three complete calendar months immediately preceding the effective date have been considered to provide a fair basis for assessing compliance. The reference level should be

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भारतीय दूरसंचार विनियामक प्राधिकरण
Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

jointly worked out by the concerned service providers and indicated in the plan to be submitted under regulation 11B. In this context, a definition of "minutes of usage" or "MoUs" has been inserted in regulation 2 to provide a common and objective basis for measuring traffic and assessing compliance.

3.2.40. The timelines and the phasing for shifting of traffic to LSA-level POIs from SDCA/LDCA-level POIs shall be based on Minutes of Usage (MoUs) of LSA between two service providers and shall be as follows from the effective date of these Regulations:

(a) by the end of the first year from the effective date, the average monthly MoUs carried through LDCA or SDCA level POIs of the LSA during the three complete calendar months immediately preceding the completion of the first year from the effective date shall not exceed eighty percent of the average monthly MoUs carried through such POIs during the three complete calendar months immediately preceding the effective date;

(b) by the end of the second year from the effective date, the average monthly MoUs carried through LDCA or SDCA level POIs of the LSA during the three complete calendar months immediately preceding the completion of the second year from the effective date shall not exceed forty-five percent of the average monthly MoUs carried through such POIs during the three complete calendar months immediately preceding the effective date; and

(c) by the end of the third year from the effective date, all existing LDCA or SDCA level POIs of the LSA shall be closed and no MoUs shall be carried through such POIs and all telecommunication traffic shall be handed over or taken over at the LSA or Service Area level, as applicable:

Provided also that no infrastructure charges or port charges shall be payable by one service provider to another service provider in respect of SDCA/LDCA-level POI(s), after the expiry of three years from the effective date of these Regulations.

3.2.41. The Authority has also noted that, under the existing framework, provisioning and augmentation of POIs may be undertaken through STM-1 ports or at lower or higher level. Since regulation 9A prescribes migration of telecommunication traffic to LSA-level or higher-level interconnection arrangements and closure of existing POIs at SDCA/LDCA level, it is necessary to amend sub-regulation (6) of Regulation 9 to ensure that any augmentation of ports using STM-1 or lower or higher level shall also be subject to the closure requirements specified in regulation 9A.

3.2.42. Concerned service providers shall coordinate among themselves and prepare LSA-wise plan in respect of all their POIs where traffic would be shifted from SDCA/LDCA level POIs to LSA level POI(s). While preparing the changeover plan, the concerned service providers must ensure uninterrupted services to the customer and carry out all necessary actions to do this in a smooth manner. The milestones shall apply to each pair of interconnected service providers of the LSA, on the basis of the MoUs exchanged between them. As migration of telecommunication traffic to LSA-

सचिव/Secretary
भारतीय दूरसंचार विनियामक प्राधिकरण
Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

level or higher-level interconnection arrangements and closure of existing POIs at SDCA/LDCA level require action by both the service providers, each service provider shall be responsible for timely completion of the actions required on its part. In case a milestone is not achieved, the Authority, on the basis of the reports submitted under regulation 11B, additional information sought from the service providers and the submissions of the concerned service providers, shall determine the service provider responsible for the shortfall before taking action, if any, under regulation 12. The following are the prescribed reporting requirements for closure of SDCA/LDCA-level POIs and shifting of traffic to LSA-level POI(s):

(a) The concerned service providers, having interconnection, shall jointly prepare and submit LSA-wise and POI-wise plan for closure of SDCA/LDCA-level POIs and shifting of traffic to LSA-level POI(s), in compliance with regulation 9A, to the Authority within three months from the effective date of these Regulations.

(b) The concerned service providers shall jointly submit monthly progress and cumulative status of closure of SDCA/LDCA-level POIs and shifting of traffic to LSA-level POI(s), within fifteen days from the end of each month or as directed by the Authority.

(c) The concerned service providers shall jointly submit compliance reports within thirty days from the end of each milestone period, as specified in regulation 9A.

(d) The concerned service providers shall also jointly furnish details of new POI(s) established, if any, after the effective date of these Regulations, within thirty days of their establishment.

Provided that, where any report required to be jointly submitted under clauses (a) to (d) mentioned above cannot be submitted jointly for any reason, either service provider may, within the time specified for such submission, submit to the Authority its individual report, along with the reasons for the non-submission of the joint report.

Regulation has been prescribed for amendment accordingly.

IP-based interconnection

3.2.43. The Authority has examined the views received from stakeholders on: Whether IP-based interconnection should be mandated for all new interconnections and whether existing E1/TDM-based interconnections should be migrated to IP-based interconnections within a specified timeframe. Adoption of IP-based interconnection is important in the context of technological advancements, efficiency, transition of telecom networks from circuit-switched, E1/TDM-based architectures to packet-switched, IP-based networks. In IP-based network deployments, voice traffic is not carried over dedicated circuits, but it is treated and carried over telecom network as data packets. Sending voice as data packets over an IP network improves bandwidth efficiency and reduces cost by sharing network resources only when voice data is transmitted, unlike circuit-switched networks that reserve a dedicated line for the entire call.

सचिव/Secretary
भारतीय दूरसंचार विनियामक प्राधिकरण
Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

3.2.44. IP-based interconnection is necessary for having end-to-end adoption of IP-based, packet-switched networks for 4G/5G/VoLTE/VoNR by service providers. Further, most of the service providers have already migrated to IP-based mobile networks and IP-TAX/NGN switches within their network but their interconnection with other service providers is still based on E1/TDM-based interconnections. The use of E1/TDM-based interconnection in the otherwise IP-based telecom networks prevents telecom networks from effectively utilizing features of IP-based networks. This could result in interoperability issues, degraded call quality, transcoding delays, inefficient capacity use, higher capital and operational costs and slower augmentations.

3.2.45. The Authority notes that during the migration process sufficient capacity has to be provisioned by the concerned service providers to ensure QoS as per the relevant TRAI regulations. For a given IP interconnection at a POI, the maximum capacity, in terms of the processing capability of the associated network elements, simultaneous concurrent sessions and available bandwidth, is determined by the session-handling capability of the interconnection equipment and the link bandwidth capacity available at the POI. Any increase in traffic demand necessitates augmentation of one or more of these elements to ensure that the POI is able to handle the required traffic load without congestion and while maintaining the desired quality of service.

3.2.46. The use of E1/TDM-based interconnection in the telecom networks also poses issues in sourcing TDM equipment because their Original Equipment Manufacturers (OEMs) no longer supply or provide support for TDM equipment and such equipment has reached its end of life. TDM being an old technology, there may be a scarcity of manpower required for operations and maintenance of TDM equipment.

3.2.47. Regulatory practices being adopted by global regulators for migration from E1/TDM-based interconnection to IP-based interconnection vary across jurisdictions. Several countries are in the process of either completing the migration to IP-based interconnection or have taken the steps to initiate the migration to IP-based interconnection.

3.2.48. The Authority does not agree with the contention of one of the stakeholders that the IP-interconnection is not required currently citing lack of readiness and security concerns for IP connectivity. IP-based interconnections are technologically advanced as compared to E1/TDM-based interconnection, therefore, IP readiness has to be ensured by all service providers and at the same time, the service providers have to mitigate the security concerns, if any. The telecom sector as well as telecom customers cannot be denied the benefits of end-to-end IP networks which are possible, *inter alia*, with IP-based interconnections in the multi operator scenario. Continued dependence on E1/TDM-based interconnection risks locking the sector into obsolete technologies and increasing the cost of using legacy systems. The Government notification dated 23rd June 2026 issued the Telecommunications (Authorisation for Provision of Principal Telecommunication

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Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

Services) Rules, 2026 under the Telecommunications Act, 2023, prescribes, *inter alia*, under sub-rule (2)(b) of the rule 32 as follows:

"....(2)(b) that interconnection and peering, as required, is established on Internet Protocol interface for carrying Internet Protocol-based traffic, as per the standards, including those notified under section 19 of the Act:

Provided that the network service operator shall convert circuit switched traffic to Internet Protocol based traffic before sending circuit switched traffic to the telecommunication networks of another network service operator or network service operator licensee;...."

Therefore, the choice of migrating to the IP-based interconnection cannot be left solely to the mutual agreement among service providers and is required to be regulated in the interconnection framework for migration from E1/TDM-based interconnection to IP-based interconnection. However, the E1/TDM-based interconnections would co-exist with the IP-based interconnections till migration to IP-based interconnection is complete.

Timelines for migration to IP-based interconnection

3.2.49. Migration from the E1/TDM-based interconnection to the IP-based interconnection needs to be implemented in a phased and well-planned manner. The timeline for this transition should be carefully balanced, such that it is long enough to allow service providers to prepare and carry out network changes without disrupting live traffic, yet not so long as to postpone the benefits of the IP-based interconnection for the telecom sector and consumers. A phased approach will enable service providers to systematically plan their network changes, modify routing parameters, and, where necessary, align their interconnection agreements, ensuring a smooth and streamlined migration. Having considered the preparatory work required and the comments of stakeholders, the Authority is of the view that a three-year timeline shall be optimum for the smooth migration from E1/TDM-based interconnection to IP-based interconnection.

3.2.50. During the transition from E1/TDM-based interconnection to IP-based interconnection, it is necessary to ensure that adequate capacity is always available to handle the traffic and maintain service continuity throughout the migration process. Migration from E1/TDM-based interconnection to IP-based interconnection involves the progressive transition of live interconnection arrangements and may require changes to network architecture, interconnection interfaces, signalling and associated operational systems. The migration of individual POIs may also depend on the readiness of both interconnected service providers and the availability of IP-based interconnection equipment. Considering these technical and operational dependencies, the Authority has considered it appropriate to prescribe a three-year migration period with cumulative milestones of 20%, 55% and 100%. The lower milestone of 20% in the first year has been prescribed keeping in view the time required for network assessment and planning, procurement and deployment of

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Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

necessary equipment. This initial phase would enable service providers to put in place the required infrastructure and arrangements before taking up migration on a larger scale. Accordingly, the milestone has been increased to 55% by the end of the second year, as the necessary infrastructure and arrangements are progressively established, and to 100% by the end of the third year, when the required infrastructure, operational arrangements and experience gained during the earlier phases would be available for migration of the remaining POIs. For the purpose of assessing compliance with these milestones, a residual traffic-based approach, similar to that adopted under regulation 9A, has been adopted. Accordingly, the average monthly MoUs carried through E1/TDM-based interconnections at POIs of the LSA shall not exceed 80%, 45% and 0%, respectively, of the reference level by the end of the first, second and third year from the effective date. The reference level is the average monthly MoUs carried through E1/TDM-based interconnections at POIs of the LSA during the three complete calendar months immediately preceding the effective date. Adoption of a fixed reference level provides a common basis for assessment. Further, as traffic volumes may vary from month to month due to seasonal factors and other variations, the average monthly MoUs of the three complete calendar months immediately preceding the effective date have been considered to provide a fair basis for assessing compliance. The reference level should be jointly worked out by the concerned service providers and indicated in the migration plan to be submitted under regulation 11B.

3.2.51. In view of the above, the following framework has been prescribed:

(1) Interconnection(s) between the service providers, established on or after the effective date, shall be established using IP-based interconnection.

(2) Migration of the existing E1/TDM-based interconnection to the IP-based interconnection:

All POIs working on E1/TDM-based interconnection shall migrate to IP-based interconnection within a period of three years from the effective date of these regulations, as given below:

(a) by the end of the first year from the effective date, the average monthly MoUs carried through E1/TDM-based interconnections at POIs of the LSA during the three complete calendar months immediately preceding the completion of the first year from the effective date shall not exceed eighty percent of the average monthly MoUs carried through E1/TDM-based interconnections at POIs of the LSA during the three complete calendar months immediately preceding the effective date;

(b) by the end of the second year from the effective date, the average monthly MoUs carried through E1/TDM-based interconnections at POIs of the LSA during the three complete calendar months immediately preceding the completion of the second year from the effective date shall not exceed forty-five percent of the average monthly MoUs carried through E1/TDM-based interconnections at POIs of the LSA during the three complete calendar months immediately preceding the effective date; and

सचिव/Secretary
भारतीय दूरसंचार विनियामक प्राधिकरण
Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

(c) by the end of the third year from the effective date, all existing E1/TDM-based interconnections at POIs of the LSA shall be migrated to IP-based interconnection and no MoUs shall be carried through E1/TDM-based interconnections at POIs of the LSA and all telecommunication traffic shall be handed over or taken over through IP-based interconnection.

(3) The Authority has also noted that augmentation of interconnection capacity may be carried out through provisioning of STM-1 ports or at lower or higher level. Since regulation 9B prescribes migration from E1/TDM-based interconnection to IP-based interconnection within the specified timelines, it is necessary to amend sub-regulation (6) of Regulation 9 to ensure that any ports for augmentation under the existing framework shall also be subject to the migration requirements specified in regulation 9B.

Regulation has been prescribed for amendment accordingly.

3.2.52. The concerned service providers shall coordinate among themselves and prepare LSA-wise migration plan in respect of all their POIs to be migrated to IP-based interconnections. While preparing the migration plan, service providers must ensure uninterrupted services and carry out all necessary actions to achieve a smooth migration. The milestones shall apply to each pair of interconnected service providers of the LSA, on the basis of the MoUs exchanged between them. As migration requires action by both the service providers, each service provider shall be responsible for timely completion of the actions required on its part. In case a milestone is not achieved, the Authority, on the basis of the reports submitted under regulation 11B, additional information sought from the service providers and the submissions of the concerned service providers, shall determine the service provider responsible for the shortfall before taking action, if any, under regulation 12. The following reporting requirements for migration to the IP-based interconnection are prescribed:

(a) The service providers, having interconnection, shall jointly prepare and submit an LSA-wise and POI-wise migration plan for migration from E1/TDM-based interconnection to IP-based interconnection, in compliance with regulation 9B, to the Authority within three months from the effective date of these Regulations.

(b) The service providers shall jointly submit monthly and cumulative progress reports of migration from E1/TDM-based interconnection to IP-based interconnection, within fifteen days from the end of each month or as directed by the Authority.

(c) The concerned service providers shall jointly submit compliance reports within thirty days from the end of each milestone period, as specified in regulation 9B.

(d) All new interconnections, established after the effective date of these Regulations, shall be jointly reported LSA-wise and POI-wise by the concerned service providers within thirty days of their establishment to the Authority:

सचिव/Secretary
भारतीय दूरसंचार विनियामक प्राधिकरण
Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

Provided that, where any report required to be jointly submitted under clauses (a) to (d) mentioned above cannot be submitted jointly for any reason, either service provider may, within the time specified for such submission, submit to the Authority its individual report, along with the reasons for the non-submission of the joint report.

Regulation has been prescribed for amendment accordingly.

3.3. **Review of process for provisioning, augmentation of ports at POIs and adequacy of Erlang as a traffic unit and its application for estimation of capacity augmentation for IP-based interconnection**

3.3.1. The proviso to the sub-regulation (3) under the regulation 6 of the Telecommunication Interconnection Regulations, 2018, as amended from time to time, provides the following in respect of applicability of the port charge for the ports provided before the 1st February, 2018:

"Provided that the port charges and infrastructure charges, for all ports provided before the 1st February, 2018, shall continue to be payable as per the terms and conditions which were applicable to them before the 1st February, 2018."

3.3.2. Chapter IV of the Unified License issued by the Department of Telecommunications contains, *inter alia*, the following provisions relating to the network interconnection:

"27.4 Licensee shall interconnect with other Service providers at the Points of Inter-connection (POI) subject to compliance of prevailing regulations, directions or determinations issued by TRAI. The charges for accessing other networks for inter-network calls shall conform to the Orders/ Regulations/ Guidelines issued by the TRAI/ Licensor from time to time. The Interconnection Agreements will, inter alia, provide the following:

(a) To meet all reasonable demand for the transmission and reception of messages between the interconnected systems.

(b) To establish and maintain such one or more Points of Interconnect as are reasonably required and are of sufficient capacity and in sufficient number to enable transmission and reception of the messages by means of the Applicable Systems."

3.3.3. The Central Government vide notification dated 23rd June 2026 has issued the Telecommunications (Authorisation for Provision of Principal Telecommunication Services) Rules, 2026 under the Telecommunications Act, 2023, wherein sub-rule (2)(c) of rule 32, inter alia, also provides for the following:

सचिव/Secretary
भारतीय दूरसंचार विनियामक प्राधिकरण
Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

"(2) The network service operator while undertaking interconnection or peering with the telecommunication network of any other network service operator or network service operator licensee shall ensure—

...

...

(c) establishment and maintenance of one or more points of interconnection and peering of sufficient capacity as are reasonably required for transmission and reception of messages in conformity with the standards and conformity assessment measures as may be notified by the Central Government under section 19 of the Act; and"

3.3.4. Further, sub-regulation (2) of regulation 8 under the Telecommunication Interconnection Regulations, 2018, as amended from time to time, provides for the augmentation of POI, as follows:

"A service provider may request the other service provider for additional ports at a POI, if the projected utilisation of the capacity of such POI, calculated in the manner as contained in schedule II to these regulations, at the end of sixty days from the date of placing the request, is likely to be more than eighty-five percent and such projected utilization of the capacity of POI shall be determined on the basis of the daily traffic for the preceding sixty days at the POI during busy hour:

Provided that the service provider shall request for such number of additional ports which is likely to bring the utilization of the capacity of such POI, at the end of sixty days from the date of making request, to less than seventy-five percent."

Schedule II, as mentioned above, is as follows:

"*Schedule* II

For given number of channels of POI, its capacity for 0.5% Grade of Service shall be deduced from the Erlang B table. The sample calculation for augmentation of ports of POI is indicated below:

Considering that Service Provider A has, for its outgoing traffic, existing POI of 600 channels with the Service Provider B, then as per the Erlang B table, the capacity of such POI at 0.5% Grade of Service shall be 562.3 Erlang. Now when the projected outgoing traffic of Service Provider A, at the end of sixty days from today, would be more than 477.95 Erlang (i.e. 85% of the POI capacity), it may request the Service Provider B for augmentation of the POI capacity by such number of ports which takes it to more than 637.27 Erlang (i.e. 477.95/0.75). As per Erlang B table, this would imply augmentation of ports at such POI by approximately 77 channels."

सचिव/Secretary
भारतीय दूरसंचार विनियामक प्राधिकरण
Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

a) **Views of stakeholders on review of process for provisioning, augmentation of ports at POIs and adequacy of Erlang as a traffic unit and its application for estimation of capacity augmentation for IP-based interconnection**

3.3.5. Some stakeholders have submitted that the continued applicability of port charges for ports provisioned prior to 1st February 2018, as provided under the Telecommunication Interconnection (Amendment) Regulations, 2018, results in the continuation of one-sided and non-reciprocal charging arrangements, which are not consistent with the principles of transparency and fairness in interconnection arrangements. They have further submitted that the underlying principle that each service provider should bear the cost of its own outgoing traffic is diluted by the continued applicability of such charges, as service providers continue to incur port charges even in respect of ports provisioned prior to the said date. This, according to the stakeholders, results in an additional financial burden on service providers. Accordingly, they have suggested that the said proviso may be removed so that the revised port charges are applied uniformly to all ports, irrespective of their date of provisioning.

3.3.6. Many of the stakeholders have submitted that the use of Erlang as a unit of traffic in the extant interconnection regulations is primarily suitable for E1/TDM-based interconnection and is no longer adequate for IP-based interconnection. While Erlang-based demand estimation is effective for circuit-switched voice traffic, it does not appropriately represent the characteristics of packet-switched IP networks, which have bursty nature of traffic and variable packet size. Stakeholders have further submitted that IP-based interconnection is fundamentally bandwidth-centric and, therefore, demand estimation and capacity planning should be undertaken using metrics such as throughput (Mbps/Gbps), peak traffic, and concurrent session handling capacity, instead of Erlang-based measurements.

3.3.7. A hybrid approach has also been proposed during the transition phase, wherein Erlang-based models may continue to be used for E1/TDM-based interconnection, whereas for IP-based interconnection, demand estimation may be assessed using bandwidth and session-based parameters.

b) **Analysis of the issues and views of the Authority on review of process for provisioning, augmentation of ports at POIs and adequacy of Erlang as a traffic unit and its application for estimation of capacity augmentation for IP-based interconnection**

3.3.8. The Authority has considered the submissions made by the stakeholders regarding the continued applicability of port charges for all ports provisioned prior to 1st February 2018 as provided under the proviso to sub-regulation (3) of regulation 6 of the Telecommunication Interconnection Regulations, 2018, as amended from time to time. The regulatory framework prescribed under these amendment regulations i.e. The Telecommunication Interconnection (Third Amendment) Regulations, 2026 provides for time-bound migration of interconnection in accordance with

सचिव/Secretary
भारतीय दूरसंचार विनियामक प्राधिकरण
Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

regulations 9A and 9B. Further, the relevant ports or POIs shall be migrated or closed, as applicable, upon completion of such migration.

3.3.9. Accordingly, once the migration stipulated under regulations 9A and 9B is completed, the said proviso relating to continuation of port charges for ports provisioned prior to 1st February 2018 shall no longer have any practical applicability. In view of the aforesaid, the Authority considers it appropriate to align the extant provision with the migration framework prescribed under these regulations.

3.3.10. The Authority has examined the submissions made by stakeholders on the adequacy of Erlang as a unit of traffic and the associated demand estimation methodologies in the context of IP-based interconnection. The Authority observes that Erlang, being a unit for traffic measurement, is suited to circuit-switched E1/TDM-based networks and does not adequately capture the nature of traffic in IP-based networks, which can be bursty and characterized by shared bandwidth. It has been noted that Erlang-based models, which were developed for circuit-switched E1/TDM-based networks, might not be appropriate for IP-based packet-switched networks due to technological differences. Accordingly, Erlang, as the basis for capacity planning, has limited relevance in such IP networks, where traffic characteristics and resource utilization differ significantly from those of circuit-switched networks.

3.3.11. The estimation of capacity augmentation for meeting projected demand in an E1/TDM-based interconnection for handling the telecom traffic at a given POI is dependent upon the number of channels available, i.e., 30 voice channels per E1, and the busy hour traffic. Erlang B table is then utilized to determine the exact number of E1s required to handle the projected traffic at POI. Whereas the estimation of capacity augmentation for meeting projected demand in an IP-based interconnection for handling the telecom traffic at a given POI is dependent upon processing strength of telecom network elements, number of simultaneous sessions handling capability, and available interconnection bandwidth. In case of growth in traffic at a given POI, appropriate scaling of these parameters is required to enable the POI to manage the increased load efficiently, without congestion and while maintaining the required quality of service. There is merit in the argument that capacity augmentation for IP-based interconnection needs to be aligned with bandwidth-centric parameters. Accordingly, the interconnecting service providers should mutually decide the required IP interconnection bandwidth, taking into account factors such as telecom network elements, number of concurrent sessions handling capability, and available interconnection bandwidth (in Mbps/Gbps).

3.3.12. At the same time, the Authority also recognizes the practical considerations involved in the transition from TDM-based interconnection to IP-based interconnection. In this context, adopting a hybrid approach appears to be pragmatic, wherein Erlang-based models may continue to be applied for existing E1/TDM-based interconnection, while suitable bandwidth and session-based methodologies may be adopted for IP-based interconnection.

सचिव/Secretary
भारतीय दूरसंचार विनियामक प्राधिकरण
Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

3.3.13. Accordingly, the Authority is of the view that the extant framework for estimation of capacity augmentation, as prescribed in Schedule II for E1/TDM-based interconnection, requires to be supplemented suitably to adequately reflect the requirements of IP-based interconnection. Accordingly, the following Schedule has been inserted after Schedule II:

Schedule-III
(See regulation 8)

For a given IP interconnection at a Point of Interconnection (POI), the maximum call handling capacity shall be determined based on the concurrent session handling capability and link bandwidth at the POI, sufficient to maintain the desired Quality of Service (QoS), as per the relevant TRAI regulations.

Sample procedure for augmentation of IP ports for maximum call handling capacity at the POI is illustrated below:-

Considering that Service Provider A has an IP interconnection with Service Provider B for its outgoing traffic, if the projected outgoing traffic of Service Provider A, at the end of 60 days from the date of placing the request, is estimated to reach or exceed 85% of either the interconnection's concurrent session handling capacity or its interconnection bandwidth capacity, Service Provider A may request an augmentation of the interconnection's session handling capacity and bandwidth capacity, as applicable, to reduce utilization to below 75%.

3.3.14. The existing definition of "port" in clause (9) of regulation 2 was framed in the context of E1/TDM-based interconnection. With IP-based interconnection being prescribed under these amendment regulations, interconnection capacity would also be provisioned through IP ports, whose capacity is expressed in terms of bandwidth. Accordingly, the definition of "port" has been substituted to cover both E1 ports of 2.048 Mbps and IP ports with bandwidth expressed in Mbps or Gbps.

3.4. **Review of the existing procedure of disconnection and surrender of POIs**

3.4.1. The consultation paper sought views on whether there was a need to revise the existing process for the disconnection of POIs as set out in Regulation 11 of the Telecommunication Interconnection Regulations, 2018. Under the prevailing regulatory framework, a service provider seeking to disconnect a POI is required to issue a show-cause notice of fifteen working days to the other service provider, outlining the reasons for the proposed disconnection, and, if the response is unsatisfactory or not received, to follow this with a further notice of fifteen working days specifying the disconnection date before taking any action. In the light of above, inputs from stakeholders were sought whether any changes are required in the existing disconnection process.

सचिव/Secretary
भारतीय दूरसंचार विनियामक प्राधिकरण
Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

3.4.2. Currently there is no surrender process in the regulatory framework and inputs from stakeholders were sought whether there is a need to introduce a process for the surrender or closure of POIs. Stakeholders were requested to provide their suggestions for the criteria, procedure, charges, and timelines, including the minimum retention period for POIs before a surrender or closure request.

a) Views of the stakeholders on disconnection of POIs

3.4.3. A few stakeholders are of the view that no regulatory intervention is required with regard to the disconnection of POIs, as this issue would gradually become irrelevant with migration to higher levels of interconnection. Some stakeholders emphasized that disconnection notices should be issued only after exhausting all available dispute resolution mechanisms.

3.4.4. Stakeholders also suggested that any disconnection should be supported by clearly stated reasons by the service provider initiating the disconnection of the POI and should be appropriately linked to the applicable financial disincentives in cases where such disconnection is subsequently found to be unjustified.

b) Analysis of the issues and views of the Authority on disconnection of POIs

3.4.5. The Authority has examined the views expressed by various stakeholders during the consultation process and the existing regulatory provisions governing the disconnection of POIs. The Authority agrees that disconnection notices should be issued only after exhausting all available dispute resolution mechanisms and any disconnection should be supported by clearly stated reasons by the service provider initiating the disconnection of the POI. The existing framework as specified in the Telecommunication Interconnection Regulations, 2018, prescribes a structured process for disconnection to be followed by the concerned service providers. These provisions ensure transparency, require the service provider initiating disconnection to state the reasons, and provide sufficient opportunity for the concerned service providers to address the issues and resolve disputes prior to disconnection.

3.4.6. Considering the above, the Authority is of the view that the existing regulatory provisions governing the disconnection of POIs are adequate and do not require any modification.

c) Views of the stakeholders on surrender of POIs

3.4.7. Many of the stakeholders expressed the view that there should be clear and time bound process for surrender of POI. One stakeholder suggested ensuring an orderly surrender of POIs without disrupting the traffic or billing. The traffic reconciliation and final settlement of charges should be done before surrender request is entertained.

सचिव/Secretary
भारतीय दूरसंचार विनियामक प्राधिकरण
Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

3.4.8. A few of the stakeholders suggested that if a service provider does not respond within the notice period to a surrender request made to it, there should be no charges applicable for the said POI and ports and the requesting service provider should be free to remove its related equipment.

3.4.9. One stakeholder suggested a phased approach for the surrender of the POIs ensuring an orderly transition and avoiding disruption to traffic. Under this approach, the process would begin with a formal notice of 90 days, including justification based on the defined criteria and traffic impact analysis. This would be followed by the preparation of a traffic rerouting plan and timelines for migration of traffic to the alternative POIs. Subsequently, a verification stage would confirm that the traffic has been successfully migrated without any degradation in quality of service. After completion of these steps, the POI may be finally closed and decommissioned.

3.4.10. Regarding advance notice period before surrender, one stakeholder suggested the notice period of 15-30 days, whereas other stakeholders suggested the notice period of 90 days. Regarding the minimum retention period before surrender could be requested, stakeholders suggested varied time period ranging from 3-6 months to 12 months and 24 months.

d) Analysis of the issues and views of the Authority on surrender of POIs

3.4.11. The Authority has examined the comments received from the stakeholders regarding the surrender of POIs. A structured process for surrender of POIs needs to be followed by the concerned service providers. This process is intended for voluntary surrender of a POI by a service provider for its own operational requirements, such as on account of reduction in traffic, withdrawal of services from an area or re-routing of traffic. It is not applicable to the closure of SDCA/LDCA-level POIs and shifting of traffic to LSA-level POI(s) under regulation 9A, or to the migration from E1/TDM-based interconnection to IP-based interconnection under regulation 9B, which shall be governed by the timelines and milestones prescribed in those regulations. A prior notice of 90 days would be appropriate, considering the operational, technical and network planning activities required to ensure uninterrupted flow of voice and SMS traffic at POI, and should be given by the requesting service provider indicating reason for the surrender of POI. This will enable the concerned service providers to make necessary arrangements for rerouting of traffic to the alternate POIs.

3.4.12. Considering that establishment of a POI involves deployment costs, a POI may be considered for surrender only after completion of a minimum retention period of 12 months from the date of its commissioning. Before closure of the POI, the concerned service providers shall take necessary steps to ensure that there is no interruption in the services. The service providers should separately undertake reconciliation and settlement of all interconnection-related charges, as applicable. Once the POI is closed, the requesting service provider shall be free to remove its POI equipment.

3.4.13. To ensure that interconnection charges are not applied beyond the period of operation of a POI, upon expiry of the notice period of 90 days or the minimum retention period of 12 months, whichever is

सचिव/Secretary
भारतीय दूरसंचार विनियामक प्राधिकरण
Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

later, no further interconnection charges shall be payable for the said POI or ports. The above notice period and minimum retention period shall not apply to POIs closed in compliance with regulation 9A or regulation 9B.

3.4.14. While framing the Telecommunication Interconnection Regulations, 2018, the Authority had taken note that the Licenses require interconnected networks to connect, and keep connected, to their applicable systems, and that disconnection of POIs results in blocking of services to consumers. Accordingly, the Authority had been of the view that disconnection of a POI should not be resorted to, barring exceptional circumstances, and when resorted to, should be carried out only after following due process. Disconnection of a POI is thus a step, resulting in stoppage of exchange of traffic at the POI, taken by a service provider for reasons attributable to the other service provider, in exceptional circumstances arising out of differences between them. Surrender of a POI, on the other hand, is the voluntary closure of the POI by a service provider for its own operational requirements, and not for reasons attributable to the other service provider, which is carried out after re-routing of traffic to alternate POIs without interruption in services. As disconnection and surrender of POIs are now governed by separate procedures and timelines, explanations have been provided in regulations 11 and 11A to clarify their nature and the applicable procedures and timelines.

3.5. **Review of Provision of bank guarantee**

3.5.1. To safeguard the net receivables of the interconnecting TSP, bank guarantees are required. Under the prevailing Regulations, the service provider requesting an interconnection agreement is required to furnish a bank guarantee for six months from the establishment of the initial interconnection, if demanded by the other provider. The bank guarantee amount is determined by the number of E1 links at the POI and the per-minute interconnection usage charges for the traffic on those links.

3.5.2. After six months or from 1st February 2018, whichever is later, the bank guarantee liability is recalculated based on the interconnection usage charges payable between the two providers for the preceding two months. The service provider who owes the net IUC must furnish a bank guarantee for six months, limited to the amount of payable charges. This recalculation and bank guarantee determination is repeated every six months thereafter.

3.5.3. In view of the above, the consultation paper sought views of the stakeholders on whether furnishing bank guarantees by one service provider to another service provider to safeguard their financial exposure arising from obligations under interconnection arrangements is required to be continued. Stakeholders were invited to state whether such a requirement remained necessary to protect against non-payment of interconnection usage charges and, if so, to prescribe any change in the process and methodology for determining the initial bank guarantee amount and any subsequent bank guarantee amount, if required.

सचिव/Secretary
भारतीय दूरसंचार विनियामक प्राधिकरण
Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

a) Views of the stakeholders on bank guarantee

3.5.4. Stakeholders expressed differing views on the requirement of the bank guarantee in interconnection arrangements. Many stakeholders argued that the bank guarantee provisions are unnecessary and not required, noting that interconnection is already a licensing requirement which is further regulated by TRAI's regulations and that operators are financially well established. Some stakeholders highlighted that with the reduction in the interconnection usage charges, the financial exposure is limited. They further mentioned that maintaining bank guarantees increases operational costs and blocks working capital. These stakeholders also emphasized that bank guarantee requirements are outdated, not commonly practiced among private operators or in mature global markets and may create imbalances in negotiations if invoked during disputes.

3.5.5. Many stakeholders stated that the requirement for bank guarantee should be treated in a reciprocal manner. They requested that the TRAI should mandate reciprocal bank guarantee provisions across all operators, including the PSU operator, to ensure a level playing field.

3.5.6. One stakeholder supported the continued requirement of bank guarantees from private operators to safeguard its dues, citing a scenario of telecom operator going insolvent and bank guarantees helping recover outstanding payments to some extent, and emphasized the need to protect the financial interests of government entities. This stakeholder has opposed collection of bank guarantee by private service providers from state-owned service provider, citing its status as a state-owned PSU.

b) Analysis of the issues and views of the Authority on review of provision of bank guarantee and interconnection agreement

3.5.7. The Authority has examined the comments received from the stakeholders regarding requirement for furnishing bank guarantee by one service provider to the other service provider. The Authority notes that the existing framework for determination of the initial bank guarantee amount and any subsequent bank guarantee amount has been in operation for a considerable period and has facilitated the mitigation of financial risks associated with interconnection arrangements. Further, no stakeholder has identified any practical difficulty, deficiency or inadequacy in the existing process and methodology for determining the initial bank guarantee amount and any subsequent bank guarantee amount, if required, or proposed any specific modification thereto.

3.5.8. There is merit in the argument that the bank guarantee can serve as a financial safeguard in certain circumstances. However, at the same time, mandating bank guarantees also increases operational costs and blocks working capital. With diminishing IUC rates, the required amount of bank guarantee as per the regulations, based on net IUC payable has also proportionately reduced over time. Therefore, the Authority is of the view that the bank guarantee and its amount as per the regulations shall continue to be provided by the service providers only if demanded by the other service provider.

सचिव/Secretary
भारतीय दूरसंचार विनियामक प्राधिकरण
Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

3.5.9. The Authority also agrees with the argument that the bank guarantee shall be furnished by all service providers on a reciprocal basis if demanded by the other service provider as per the regulations, irrespective of the service provider being a private or a PSU service provider. No distinction should be made between private and PSU service providers for securing interconnection-related financial liabilities, as reciprocal furnishing of bank guarantees ensures non-discriminatory treatment.

3.5.10. Regarding need for any change in the process and methodology for determining the initial bank guarantee amount and any subsequent bank guarantee amount, the Authority is of the view that the existing process and methodology are adequate, except that the recalculation and determination of the bank guarantee amount every six months, as currently required under the regulations, is too frequent. Considering that the liability is determined on the basis of actual interconnection usage charges payable between the interconnecting service providers and that significant changes in such liability may not arise within short intervals, it is considered appropriate to carry out the reassessment at the end of every twelve months. This would reduce the compliance burden on service providers and the effort involved in periodic reassessment. Further, the period for which the bank guarantee is furnished, presently six months, also needs to be changed to twelve months. Otherwise, the bank guarantee would expire after six months while the next reassessment would fall due only after twelve months, leaving a gap of six months without any bank guarantee. It is, therefore, decided that both the period of the bank guarantee and the interval of reassessment shall be twelve months. The basis for determining the amount, that is, the net interconnection usage charges payable for the preceding two months, shall remain unchanged. Further, in respect of bank guarantees furnished before the effective date, the next determination shall be made on expiry of such bank guarantees, so that no period remains uncovered during the transition.

3.5.11. The Authority has considered the views of stakeholders, wherein some stakeholders have suggested reduction, removal or reciprocal application of bank guarantees citing lower financial exposure, impact on working capital and prevailing industry practices. While other stakeholders have emphasized the need for bank guarantees as a safeguard against payment default and financial distress. Taking an overall view, the Authority is of the opinion that the existing framework continues to be relevant, subject to the modifications discussed above.

3.5.12. Another issue that needs determination is whether the ceiling amount of the initial bank guarantee currently provided in regulations, which is based on E1 links, can be extended to IP links. The initial bank guarantee amount is calculated on the basis that an E1 link, whose bandwidth is 2.048 Mbps, can carry maximum 30 numbers of voice calls simultaneously. However, an IP link of same capacity, i.e., 2.048 Mbps can carry more numbers of voice calls simultaneously. Therefore, recalculating the initial bank guarantee amount for an IP link based on same approach would result in a higher amount. Any upward revision in the bank guarantee amount may lead to increased financial burden on the service providers, and block working capital. This may not be justified, particularly in the context of reduced interconnection usage charges. Therefore, the Authority is of the view that the ceiling

सचिव/Secretary
भारतीय दूरसंचार विनियामक प्राधिकरण
Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

amount of the bank guarantee currently prescribed for an E1 link can be applied for an IP link of the same capacity and its multiples. This will ensure proportionality, avoid undue financial burden on service providers and at the same time retain adequate financial safeguard within the interconnection framework. Accordingly, Schedule I has been substituted.

3.5.13. Further, as interconnection usage charges are payable for exchange of voice calls and short message service between service providers, the definition of "interconnection usage charges" in clause (6) of regulation 2 has been amended to include short message service. Also, service providers may now hold either a licence or an authorisation for provision of telecommunication services. In order to align these regulations accordingly, a definition of "authorisation" has been inserted in regulation 2, and clause (8) of regulation 2 and clause (a) of sub-regulation (1) of regulation 4 have been amended to refer to the licence agreement or authorisation, as applicable. Further, in the proviso to regulation 11, the word "Licensor" has been substituted by the words "Central Government", so that the provision applies uniformly to both licensees and authorised entities. The Authority also notes that sub-regulation (3) of regulation 4 provides for submission of suggestions and objections, if any, on the draft interconnection agreement but does not expressly provide for the subsequent process. Accordingly, sub-regulation (3) of regulation 4 has been amended to provide that the service providers shall, through mutual agreement, enter into the interconnection agreement within the period specified in regulation 3.

3.6. **Procedures for addressing delay in payment of interconnection related charges**

3.6.1. The consultation paper sought views on whether there is a need to establish a procedure for addressing delays in the payment of interconnection-related charges by one service provider to another. Suggestions were sought from stakeholders on an approach for addressing delayed payments, along with justification for their proposals.

3.6.2. Currently this aspect of delayed payment is not provided for in the regulations. Different service providers adopt different processes to address delays in the payment of interconnection-related charges.

a) Views of the stakeholders

3.6.3. One stakeholder argued that the interconnection agreement between service providers provides for imposing interest on delayed payments. This provision provides adequate deterrent, ensures timely payments and is working fine and as such, no additional mechanism is required over and above provision for interest on delayed payment. However, it was requested to prescribe in the regulation a reciprocal interest on the delay in payment beyond 15 days of receipt of invoice.

3.6.4. A few stakeholders stated that the PSU operator imposes higher interest rates on the delayed payments in comparison with other operators, while paying no interest on its own outstanding dues.

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भारतीय दूरसंचार विनियामक प्राधिकरण
Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

These stakeholders suggested that a reciprocal principle is required to be adopted and the Authority should prescribe the rate of interest on delayed payments, which the service providers should be allowed to charge from each other in case of delayed payments after the due date.

3.6.5. One stakeholder suggested that in the case of delay in the payment of interconnection-related charges, the invoicing party should have right to set off these charges from its payable, as part of the interconnect regulation, irrespective of the provision of the interconnect agreement.

3.6.6. Another stakeholder stated that levying interest for delayed payment is enough for addressing delays in the payment of interconnection-related charges. However, the interest is rarely levied because of disputed claims. This stakeholder further added that in the case of an inordinate delay in payment, a procedure may be made to disconnect the POI.

3.6.7. Some stakeholders suggested that a mandatory penal interest rate must be prescribed for all delayed payments of interconnection-related charges. This rate should be objective, market-linked, and based on the State Bank of India's (SBI) Marginal Cost of Funds-based Lending Rate (MCLR). A few stakeholders suggested that interest rate of SBI MCLR + 2% should be prescribed on a reciprocal basis by the Authority.

b) Analysis of the issues and views of the Authority

3.6.8. The Authority has examined the comments received from stakeholders regarding any need to establish a procedure for addressing delays in the payment of interconnection-related charges by one service provider to another. Review of the interconnection agreements between service providers indicates that the agreements generally provide for measures to address delays in payment of interconnection-related charges, which serve as a deterrent against delayed payments and promote timely settlement of dues. However, there seems to be application of interest charges in the case of delayed payment of interconnection related charges by one service provider to another service provider on a non-reciprocal basis. The Authority finds merit in the suggestion to prescribe an objective and market-linked penal interest rate for delayed payments of interconnection-related charges.

3.6.9. Further, the Authority does not agree to the suggestion to allow unilateral set-off of interconnection-related charges against payable amounts. Allowing such a mechanism could lead to further disputes between service providers regarding the correctness of claims and deductions. It may also result in operators withholding payments on the basis of disputed amounts. Regarding specifying the period from the receipt of invoice beyond which the interest shall be levied in case of delayed payment, the Authority is of the view that such period shall be as mutually agreed between the service providers, as the commercial arrangements and operational practices may vary across operators.

सचिव/Secretary
भारतीय दूरसंचार विनियामक प्राधिकरण
Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

3.6.10. Therefore, it is prescribed that in the case of delay in the payment of interconnection charges or interconnection usage charges by a service provider, beyond the time specified in the interconnection agreement, it shall be liable to pay interest on the outstanding amount. As the provision applies equally to all service providers, such payment of interest shall be on a reciprocal basis. The interest rate shall be mutually decided and shall not exceed the State Bank of India's one-year Marginal Cost of Funds-based Lending Rate (MCLR) plus 2% per annum, prevailing as on the beginning of the financial year in which the default occurs.

3.7. **Financial Disincentive Framework**

3.7.1. The consultation paper sought views of the stakeholders on the need to revise the financial disincentive framework as provided in the Telecommunication Interconnection Regulations, 2018.

3.7.2. Under the existing financial disincentive framework, as provided in the Telecommunication Interconnection Regulations, 2018, the Authority had prescribed that as a consequence of the contravention of the provisions of these regulations by any service provider, it shall, without prejudice to any penalty which may be imposed under its licence, or the provisions of the Act or rules or orders made or directions issued, thereunder, be liable to pay an amount, by way of financial disincentive not exceeding rupees one lakh per day per licensed service area or service area, as the Authority may direct, provided that no order for payment of any amount by way of financial disincentive shall be made by the Authority unless the service provider has been given a reasonable opportunity of representing against the contravention of the regulations observed by the Authority.

a) Views of the stakeholders

3.7.3. One stakeholder submitted that the existing provision of financial disincentives of rupees one lakh per day per licensed service area or service area for contravention of the Regulations is adequate and does not require revision. The stakeholder also expressed opposition to the concept of financial disincentives in a mature telecom market, while stating that regulatory provisions should be sufficient to ensure compliance by service providers.

3.7.4. Another stakeholder submitted that the financial disincentive framework under the Telecommunication Interconnection Regulations, 2018, should be revised. While expressing opposition to the concept of financial disincentives in principle, the stakeholder stated that such a framework may still be necessary to ensure compliance. This stakeholder recommended revising the financial disincentive framework to ensure parity and uniform application across all operators. It also suggested including provisions for penalties in cases of refusal or delay in establishing interconnection arrangements and stricter disincentives for non-compliance in respect of service providers obligations such as port provisioning and POI augmentation.

सचिव/Secretary
भारतीय दूरसंचार विनियामक प्राधिकरण
Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

3.7.5. Another view expressed by a stakeholder was that the financial disincentives should be retained to ensure compliance of rights and obligations of service providers under the interconnection framework. The stakeholder recommended that such disincentives should be applied in a graded manner so that penalties are proportionate to the extent and duration of non-compliance. It was also suggested that the financial disincentives should serve as a deterrent to ensure timely compliance with regulatory obligations and milestones.

3.7.6. One stakeholder stated that financial disincentive should be on a case-to-case basis after ascertaining the reasons, giving a chance to both the parties/service providers to explain their part. A flat financial disincentive because of delay in providing POI may not be the right approach.

3.7.7. A few stakeholders stated that financial disincentives should be retained to ensure the rights of service providers and compliance of its obligations by service providers under the interconnection framework, but they should be applied in a graded and case-by-case manner after ascertaining the reasons of non-compliance. Financial disincentives should be proportionate to the extent and duration of non-compliance, and both parties should be given an opportunity to explain the reasons for any delay in interconnection or any contravention of the regulations. They further emphasized that financial disincentives should act as a deterrent to ensure timely compliance with the regulatory obligations, and at the same time, a flat or automatic financial disincentive for delays, such as in providing POIs, may not be appropriate.

b) Analysis of the issues and views of the Authority

3.7.8. The Authority has examined the comments received from the stakeholders regarding the need to revise the financial disincentive framework as provided in the Telecommunication Interconnection Regulations, 2018. The Authority observes that the financial disincentives play an important role in ensuring compliance with the obligations of service providers under the Regulations, as well as in safeguarding the rights of service providers under the interconnection regulatory framework.

3.7.9. The Authority is of the view that the existing provision relating to financial disincentive in the Regulations requires revision to make the regulatory framework more effective, proportionate and commensurate with the nature and seriousness of the contraventions covered under these Regulations.

3.7.10. The Authority has considered the nature and potential impact of non-compliance with the provisions of these Regulations. Regulation 11B relates to reporting requirements. Compliance with these requirements is important for effective monitoring by the Authority. However, non-compliance with these requirements generally has limited direct impact on other service providers or on interconnection arrangements. The Authority is, therefore, of the view that a relatively lower financial disincentive is appropriate for contravention of Regulation 11B.

सचिव/Secretary
भारतीय दूरसंचार विनियामक प्राधिकरण
Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

3.7.11. On the other hand, the provisions covered under Regulations 3, 4(2), 9, 9A, 9B, 11 and 11A relate to various aspects of interconnection arrangements and processes. Any delay or non-compliance in entering into interconnection agreements, providing interconnection, migration of traffic to LSA-level POI(s), migration from E1/TDM-based interconnection to IP-based interconnection, disconnection and surrender of interconnection may have a direct and significant impact on other service providers and the proper functioning of the interconnection framework. Such non-compliance, particularly if it continues for a prolonged period, may affect the ability of other service providers to establish or maintain interconnection arrangements and may also delay the implementation of the regulatory framework.

3.7.12. The Authority, therefore, considers it appropriate to prescribe a higher financial disincentive for contraventions of Regulations 3, 4(2), 9, 9A, 9B, 11 or 11A, as compared to the financial disincentive prescribed for contravention of Regulation 11B.

3.7.13. The Authority has also considered that a fixed financial disincentive, irrespective of the duration of the contravention, may not adequately distinguish between a short delay and continued non-compliance. Therefore, a graded financial disincentive has been prescribed, with a lower rate for delay up to fifteen days and a higher rate where the delay continues beyond fifteen days. The higher rate for prolonged delay is intended to encourage service providers to take timely corrective action and ensure compliance at the earliest.

3.7.14. For clarity, the financial disincentive shall be calculated on an accumulated basis according to the number of days of delay. For example, in case of a contravention where the applicable rates are ₹50,000 per day for the first fifteen days and ₹1,00,000 per day for each day beyond fifteen days, if the delay is for twenty days, the financial disincentive would be ₹7.5 lakh for the first fifteen days and ₹5 lakh for the next five days, making a total financial disincentive of ₹12.5 lakh, subject to the applicable ceiling.

3.7.15. At the same time, the Authority is of the view that there should be a reasonable ceiling on the financial disincentive so that the financial liability does not continue indefinitely. Accordingly, an overall ceiling of rupees twenty-five lakh per Service Area for each instance of contravention of Regulation 11B and rupees one crore per Service Area for each instance of contravention of Regulations 3, 4(2), 9, 9A, 9B, 11 or 11A has been prescribed. Accordingly, the following Schedule has been inserted for financial disincentive:

सचिव/Secretary
भारतीय दूरसंचार विनियामक प्राधिकरण
Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

Schedule IV

(See regulation 12)

Sl. No.	Contravention under the regulation	Amount of financial disincentive for each instance of contravention
1.	Contravention of regulation 11B	(a) Up to fifty thousand rupees per day for delay up to fifteen days; and (b) Up to one lakh rupees for each day of delay beyond fifteen days: Provided that the financial disincentive under item (a) and item (b) above shall not exceed rupees twenty-five lakh per Service Area for each instance of contravention.
2.	Contravention of regulation 3, sub-regulation (2) of regulation 4, regulation 9, regulation 9A, regulation 9B, regulation 11 or regulation 11A	(a) Up to one lakh rupees per day for delay up to fifteen days; and (b) Up to two lakh rupees for each day of delay beyond fifteen days: Provided that the financial disincentive under item (a) and item (b) above shall not exceed rupees one crore per Service Area for each instance of contravention.

3.7.16. The Authority has also noted that, for certain contraventions, the amount of financial disincentive specified in these regulations is lower than that applicable under the existing provisions. In such cases, it has been provided that, in respect of any contravention committed before the commencement of these amendment regulations, the Authority may impose financial disincentive up to the amount or limit specified in these regulations, where such amount or limit is lower.

3.7.17. The Authority is also of the view that the quantum of financial disincentive should not be determined solely by reference to the number of days of delay. The nature, extent, duration, frequency and impact of the contravention may vary from case to case and should also be considered while determining the quantum of financial disincentive.

3.7.18. The Authority is of the view that a service provider should be given a reasonable opportunity to represent against the contravention before financial disincentive is imposed. This will ensure fairness and enable the Authority to consider the submissions of the service provider before determining the financial disincentive.

सचिव/Secretary
भारतीय दूरसंचार विनियामक प्राधिकरण
Telecom Regulatory Authority of India
नई दिल्ली/New Delhi

3.7.19. The Authority is of the view that the financial disincentive imposed on a service provider should be paid within twenty-one days or within the period specified in the order. To ensure timely payment and discourage delay, simple interest on the outstanding amount of financial disincentive has been provided in case of delayed payment. The Authority considers that linking the rate of interest to the one-year Marginal Cost of Funds-based Lending Rate (MCLR) of State Bank of India, with an additional two percent, would provide an objective basis for determining the applicable rate. Accordingly, the service provider shall be liable to pay simple interest on the outstanding amount at the said rate applicable at the beginning of the relevant financial year in which the last day of the stipulated period falls. It has also been provided that a part of a month shall be reckoned as a full month for calculation of interest and a month shall be reckoned as an English calendar month.

3.7.20. The Authority is of the view that the regulatory framework may require review from time to time and that issues relating to the interpretation or application of the provisions of these regulations may arise. Accordingly, provisions enabling review of these regulations and issuance of necessary clarifications or guidelines for removal of difficulties have been included.

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