



**Harish Krishnan**  
**Managing Director,**  
**Public Affairs & Strategic Engagements,**  
**India & SAARC**

**Cisco Systems (India) Pvt. Limited**  
First Floor, RMZ Infinity, Plot No 15  
Phase IV, Udyog Vihar  
Gurugram, Haryana 122015  
Tel : 9810139546 Fax : 91-124-4402007  
Email : harkris2@cisco.com

**Date: July 4, 2019**

Telecom Regulatory Authority of India  
Mahanagar Doorsanchar Bhawan  
Jawaharlal Nehru Marg  
New Delhi: 110 002

Dear Sir,

**Subject: Cisco response to Consultation Paper on Review of Regulatory Framework of Interconnection**

At the outset, we would like to thank TRAI for undertaking consultation to review the regulatory framework for interconnection. With landmark innovations in communications, including infrastructure and service delivery, a smooth interconnection regime of fixed line network is essential.

We at Cisco welcome this opportunity and are providing inputs based on our experience as a technology leader in networking and telecom partner for core networking, communication and security products and solutions.

Please find enclosed our detailed submission on TRAI consultation paper. Look forward to your kind consideration of our inputs and opportunity to discuss further.

Thank You.

Best Regards,

A handwritten signature in blue ink, appearing to be "MK", with a horizontal line underneath.

**Harish Krishnan**



**Response to TRAI Consultation Paper on Review of Regulatory Framework for  
'Interconnection'**

May 30, 2019

Cisco Systems is the world's largest manufacturer of networking equipment and a market leader in the provision of network management solutions and applications. We at Cisco, are grateful for the opportunity to share our feedback to TRAI as it reviews the regulatory framework for 'Interconnection'. Our responses to the questions posed in the Consultation Paper issued on May 30, 2019 are below for your kind perusal.

We, at Cisco, believe that a growing economy like India needs connectivity solutions for businesses to function, which are device and location agnostic. Globally, technologies have advanced that will disrupt the way we connect. Therefore, it is encouraging to see TRAI working towards a technology neutral regulatory framework to enhance service delivery and customer experience.

We have taken the opportunity of TRAI's review of the regulatory framework for interconnection to share perspectives on innovative collaboration opportunities including mixing of IP-PSTN on select platforms. We completely acknowledge TRAI's intent to strike a balance between allowing new technology to thrive yet combat toll bypass. However, we believe it is an opportune time for TRAI to enable exponential growth of innovations and unlock the potential of mixing IP-PSTN in the way we do business, manage educational and medical institutions, trade and mobility.

**Q.1 Whether the flexibility be provided to interconnecting operators for interconnecting PSTN to PSTN networks at SDCC/ Level II TAX (SSA)/ Level I TAX (LSA) levels as per their mutual agreements? If no, then justify your comments with reasons.**

No response

**Q.2 In case of no mutual agreement between the operators, what should be the level of interconnection for interconnecting PSTN to PSTN networks be mandated in the Regulations.**

No response

**Q3. Any other issue you would like to bring to the attention of the Authority.**

We believe that in the era of collaborative networking, the regulations should allow bridging IP Audio, IP Video, CUG and PSTN traffic in India.



Cloud based conferencing services help large and small organizations to collaborate with internal employees or with any external participant using internet, CUG or PSTN. Today, Indian customers are serviced with International Bridges (mostly Singapore/US), by carrying all IP traffic and PSTN traffic (international long distance) to international location. This serving arrangement is expensive and limits access by most of Indian users at the mid to lower end of the market, who stand to gain the most from use of such digital technology in line with PM Modi's vision of enabling a truly Digital India.

A wide array of innovative offerings often depends on enabling IP and PSTN endpoints simultaneously, particularly to extract maximum benefits. A good example of this is collaborative videoconferencing, where multiple end users join a single meeting in which they meet via video, chat via electronic message, and work on documents and virtual whiteboards in real time. For a variety of reasons, including bandwidth limits for some users and physical equipment limitations for others, many participants connect their audio to the meeting via PSTN endpoints, while many others connect directly via IP from laptops and smartphones. Prohibiting IP-PSTN mixing vastly limits the reach and effectiveness of this kind of collaboration service.

Most global conferencing contracts for such services are signed outside of India hence incurring loss to not just the Indian government exchequer but also telecom service providers. This serving arrangement increases the cost of solution hence most of Indian enterprises esp. small and medium companies do not have access to such services. There is loss of revenue for Indian Service Providers as they lose access to huge local (national), IP Voice & Video traffic and International incoming traffic.

Building a globally connected datacenter in India will help serve Indian market by reducing access costs (National long distance instead of International long distance for PSTN) and better connectivity (reduce latency for IP Audio or Video traffic). This will also help keep relevant customer data in India and align with any data sovereignty regulations that may apply in future.

For the above reason, we suggest that the DOT urgently look at a policy/guidance that enables conferencing providers to mix IP traffic from the Internet or CUG with PSTN traffic from a telecom service provider on its conferencing bridge. A key part of this policy/guidance should be a method that entitles a telecom service provider from whom the PSTN telecom numbers are procured to be compensated for the IP traffic in the form of a termination charge as if the IP traffic had terminated on its PSTN network. In this way, there is no toll bypass for any other telecom service provider since they are not providing the PSTN numbers. The data charges for the IP traffic will be paid as usual to the ISP from whom the data resources were procured.



While our suggestion is from the narrower perspective of enabling a broader and more effective use of digital conferencing technologies in India, we also believe that India should allow for mixing of IP and PSTN on a wider basis, for the following reasons:

1. Innovative, converged services mix IP and PSTN streams

The prohibition also impacts many Internet-of-Things services. While the core of most IOT services rests on machine-to-machine communications, many applications include a communication layer that enables factory managers or other observers to interact with each other in real time based on the data the IOT service delivers. As with collaboration services, this capability is most valuable when it is open to all end users, including those that do not have ready access to an IP endpoint.

There is little doubt that the IP-PSTN barrier will impact a wide array of innovative services that are still on the drawing board. These include applications ranging from connected homes, to connected classrooms, to healthcare, and to autonomous vehicles. The future scale of the potential impact is immense.

2. The IP-PSTN barrier drives away innovators

For the reasons discussed above, India's current IP-PSTN barrier poses a significant challenge to the innovators developing these services and to the consumers and enterprises that use them. This impacts Indian consumers and enterprises directly, as they are often forced to use significantly pared back versions of the services. It also impacts India more broadly and more indirectly, as service providers and innovators will increasingly consider developing and testing new advanced services in other countries.

3. The barrier is not aligned with global technological convergence

While different transmission technologies were once distinct in their capabilities and uses, they are now virtually interchangeable. The IP-PSTN barrier reinforces a distinction that is no longer applicable to advanced technologies; the result is that Indian consumers are not getting the full benefits of technological possibilities as in other countries that allow IP-PSTN mixing.

4. Removing the barrier will allow advanced telecom services to flourish

As mentioned above, Indian service providers can stand to gain if IP voice & video traffic and international incoming traffic are allowed to merge.



For these reasons, we urge TRAI to reconsider the prohibition. While it may have served a valid purpose when first crafted, it is now a barrier to India's advancement as a world leader in advanced communications technologies.

**Suggestions:**

While eliminating the barrier altogether would be the most effective approach, we request that TRAI considers narrowing its scope of applicability in the first stage. At present, the barrier is almost total, prohibiting IP-PSTN mixing in virtually any context (except for rare applications which anyway require licensing or authorization). To the extent the original purpose was to address toll bypass, TRAI could consider applying the barrier only to point-to-point voice calls because they are the communications most directly responsible for toll bypass losses. Limiting the prohibition to point-to-point calling – but freeing IP-PSTN mixing in other contexts such as conferencing – would allow innovative collaboration and IOT offerings to thrive in India, securing its place as a world leader in tech innovation. It is also understood from the Service Providers that their license permits them to mix PSTN with IP and provide Managed IP to end users. Directions from DOT/TRAI permitting mixing of Managed IP with IP would also go a long way in allowing innovative collaboration and IOT offerings to thrive in India.

**Conclusion:**

We expect the serving arrangement to bridge in India, global an Indian IP traffic with Managed IP Calls to bring world class services to all of India market. It will aid in core government policies of making Indian enterprises globally competitive (Make-In-INDIA, Digital INDIA, START-UP India) and providing Indian market the chance to avail the latest available technology in a very cost-effective manner to conduct meetings. We also believe that this aligns with the Indian government's initiative of improving India's Ease of Doing Business ranking. It may be noted that almost all economies globally permit this structure of IP and PSTN bridging for communication and collaboration purposes.

We understand policy imperatives, hence, are open to other means of making this a reality, including a method of preventing toll bypass, which we understand is the primary purpose of the restriction of IP and PSTN bridging/mixing. This method will open additional revenue for Service Providers as well as add to the government revenue share.

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