To,

Shri Akhilesh Kumar Trivedi,
Advisor (Network, Spectrum and Licensing),
Telecom Regulatory Authority of India,
4th, 5th, 6th & 7th Floor, Tower- F,
World Trade Centre, Nauroji Nagar
New Delhi - 110029

advmn@trai.gov.in

Subject: MediaNama Countercomments on CP on Network Authorisations under Telecom Act

Sir,

Thank you for allowing us to file counter comments to comments made in response to the Consultation Paper on Network Authorisations under the Telecom Act. We greatly appreciate the TRAI process of consultation, and the transparency it brings to regulation. It is a standard that should be followed by other regulators, including SEBI and RBI, as well as Ministries such as MEITY, DOT and MIB, but they fail to do so. You're the benchmark, and your approach is greatly appreciated. Big fan.

Please find attached our counter comments, which explain why there should be no licensing or authorisation framework for CDNs and IXPs, and counters some factually inaccurate claims by some telecom operators.

Thanking you,

Nikhil Pahwa
Founder and Editor,
MEDIANAMA

On Principle…

On the outset, we'd remind the TRAI that the Internet is not a network but a network of networks. The global interconnection regime between these networks enables the Internet to function, and is in a state of **high efficiency and market driven equilibrium**.

Any attempts to make changes to this regime, whether through mandated interconnection costs or a licensing/registration regime that means that some entities will not service the Indian market, and/or it may impact the quality and cost of global internet connectivity that is received in India.

This may have a downstream impact on quality and cost of connectivity to global services that are used by Indian startups, and hence impact the functioning of services provided to Indian internet users.

We have proof of this impact.

In South Korea, when the SPNP regulation that brought in interconnection charges for large traffic carriers was brought in in 2016, Facebook's content delivery servers (also called caches) were connected

with SK Broadband's network. But because of SPNP, SK Broadband demanded payment for allowing Facebook's cache servers to connect to its network to which Facebook refused. Instead, it began rerouting traffic into Korea through Hong Kong which led to users experiencing slower speeds because the data had to cross vast distances to reach Korean internet users. ([source](#)).

An open and competitive Internet connectivity environment, with ease-of-doing-business for all stakeholders, whether ISPs, TSPs, IXPs or CDNs is essential for stable Internet connectivity in the country, especially for addressing potential geopolitical risks for the country. A myopic Telecom-Operator-centric approach to Internet connectivity, such as that envisioned by Bharti Airtel for CDNs and IXPs (ref: counter-comments below), or by Reliance Jio for IXPs, in fact increases geopolitical risks for India, when it comes to Internet connectivity.

This is illustrated by how, in 2022, when Russian telecom companies Rostelecom and MegaFon were removed from the London Internet Exchange (LINX), there was no impact for Russian users, because the operators support "the reliable supply of its services to all types of consumers by ensuring stable operations of their digital infrastructure and communication networks. This includes Internet access and **traffic exchange. For traffic exchange with overseas sites, the firm maintains reserves and alternative channels."**

Thus, a healthy and competitive local Internet Exchange environment, as well as encouragement for local and global CDN's to interconnect in India will ensure stable Internet connectivity in the country, and strengthen us as a nation. Limiting market players increases dependence and hence risks.

Specific counter-comments

On regulation of CDNs

Specific counterpoints to recommendations made by Airtel and Vodafone Idea regarding CDNs:

1. Licensing of CDNs: Regulating CDNs as a distinct category through licensing or registration is unnecessary, as they are intermediaries that do not provide end-user services. Globally, CDNs like Cloudflare and Akamai operate without registration or licensing requirements, fostering innovation and ensuring minimal operational hurdles.

Neither the TRAI nor the Telecom Operators have demonstrated compelling evidence that the CDN sector requires additional regulation. CDNs operate efficiently under existing frameworks, with market forces naturally driving improvements in content delivery and efficiency. Introducing regulations without addressing a proven market failure is counterproductive.

Industry-driven initiatives such as the Internet Engineering Task Force (IETF) protocols have historically facilitated global interoperability without regulatory intervention.

Imposing additional oversight mechanisms such as registration, periodic reporting, or specific data localization requirements duplicates existing obligations, creating inefficiencies without adding value.

For once, we agree with Reliance Jio's frankly uncharacteristic recommendation against a regulatory regime, stating that "CDNs are important components of digital economy and work under mutual

agreement with service providers and content providers and should be kept out of the regulatory framework. These are emerging services that anyways work with licensed service providers and should be permitted to organically grow and flourish in interest of EODB."

Usually, entities like Jio demand more regulation for other market participants (and less for themselves), so this is unexpected and welcome.

2. In response to demands for QoS Compliance for CDNs: CDNs do not provide end-to-end communication services and merely act as intermediaries to improve content delivery. Holding them accountable for QoS, which is the responsibility of ISPs and TSPs, is both unnecessary and impractical. Network performance is a shared responsibility, and failures in QoS often result from ISP bottlenecks rather than CDN inefficiencies. Introducing QoS standards for CDNs may lead to regulatory overlap and increased compliance costs. In markets like the US and Europe, ISPs are primarily responsible for maintaining QoS, while CDNs operate without specific QoS obligations, ensuring efficient market-driven performance.

Additionally, establishing minimum QoS standards for CDNs adds unnecessary regulatory complexity, as the primary role of a CDN is to optimize content delivery, not guarantee network performance. ISPs, who control the "last mile" to consumers, are better positioned to uphold QoS standards. Imposing QoS compliance on CDNs could lead to conflicts between CDNs and ISPs over accountability for failures, further complicating the ecosystem.

3. Content/URL Blocking: CDNs are not content creators or arbiters of what should or should not be accessible. Content blocking should remain the purview of ISPs or content platforms, which have the statutory responsibility to do this as licensed entities, and also control and control of last mile access to the end user. As such, CDNs optimise peering arrangements between network infrastructure providers, and have no direct relationship with end users. For content blocking, we need to enforce TSP/ISP-level enforcement mechanisms and ensure court orders for content blocking are directed at content platforms or ISPs.

4. Mandating Infrastructure in Tier-2 and Tier-3 Cities: CDNs naturally deploy infrastructure in response to market demand, as proximity to high-traffic regions drives latency reduction and cost optimization. Additionally, large content providers naturally deploy servers closer to end-users to reduce latency. Regulatory mandates for decentralization could result in overinvestment in less critical regions, leading to inefficiencies.

Mandating investments in less-utilized regions is a waste of resources, and should not be enforced on market participants. For telecom operators, rollout obligations are a part of their spectrum licensing arrangements to ensure public interest since they have exclusivity over scarce resources like spectrum.

5. Commercial Arrangements Between CDNs and ISPs: Allowing market forces to govern agreements between CDNs and ISPs has successfully fostered collaboration, innovation, and cost efficiency. Requiring CDNs to submit agreements to regulatory bodies risks exposing sensitive commercial data, potentially leading to competitive disadvantages or regulatory overreach. Non-discrimination clauses already ensure fair practices, rendering additional reporting requirements redundant. Globally, CDN-ISP partnerships operate on mutually beneficial terms without regulatory mandates, proving that market-driven

negotiations ensure fair and efficient outcomes. There is no market failure, and thus the need for regulation does not arise.

On regulation of IXPs

Over the past decade, India has seen an increase in the number of private IXPs. This has happened because of the failure of NIXI as a national internet exchange, and specifically because of one key approach by NIXI: its board, composed primarily of ISPs, had for long mandated that only ISPs would be allowed to interconnect with NIXI; this situation may have changed now, but it was in contrast to global best practices, wherein datacenters and CDNs are allowed to connect directly to internet exchanges. The ISPs benefit from this arrangement because it forces content companies to host with them in order to connect to exchanges.

It is because of this market-failure that we saw the advent of private Internet exchanges that allowed CDNs and datacenters to connect, and we've seen them become the preferred choice for connectivity.

The private exchanges are thus a response to a market failure caused by overregulation of interconnection at NIXI, apart from alleged inflexibility of rates, and expensive connection with ports, as well as its "receiver party pays" approach, as documented by Anurag Bhatia, an Internet connectivity expert with Hurricane Electric. He writes:

"They (NIXI) never picked up much interconnection due to a number of fundamental issues with their policies.I have written about their issues in the past multiple times in my blog post including (but not limited to) charging for traffic on the "requester pays" model of x-y and charging as high as 50Rs/GB during early days. Next was the issue of not allowing non-licensed (including content networks) to peer at the IX. And lastly the policy of forced multilateral peering policy. Out of these three last still exists.

The other two are gone for a good reason. So no more x-y charge from the last few years and non-ISP license networks are now welcome to connect."

NIXI only allowed content players to interconnect in 2019, while private exchanges enabled this much earlier.

In fact, that private exchanges are doing far better than NIXI has been admitted by NIXI in its filing with the Competition Commission of India. NIXI (referenced as OP) admits to the CCI that other private IXPs are more successful, saying:

> "A comparative analysis of the traffic hosted by the OP vis-à-vis that of the Informant for the years 2016-17, 2017-18, 2018-19, 2019-20, 2020-21, 2021-22 clearly shows that in spite of the fact that the OP had the first mover advantage by way of its incorporation in 2003, **the Informant (who entered the market in 2016) has hosted more traffic consistently over the period from 2016-2022.** The statistics accessed from the website of the Informant provides that Informant has traffic of 2.393 Tbps whereas the OP is having traffic of 1.3 Tbps. The OP submitted that in the six cities where the Informant is present it is consistently maintaining more IXs than those of the OP during the period ranging from 2016-2022. It is averred that in six cities including Hyderabad, where the Informant is present, **the Informant has nearly four times more connected networks than that of the OP.**" (Source)

As an example, please take note of Bharti Airtel's submission regarding IXPs. Bharti Airtel says that:

- No content to content peering should be allowed. Only ISPs should be allowed to peer. Content-to-content peering would be inconsistent with the licensing and regulatory framework (wherein the content 'access' to a user is provided by a licensed ISP) and thus contradict the entire notion of user and provider.
- The end user should not be allowed to connect at exchanges/IXP for any content-to-content peering
- The role of the exchanges in this framework should only be to provide a common location or colocation place (i.e., DC facility) where different ISPs can place their equipment to peer with each other on the commercial conditions previously mutually agreed upon.

Why Airtel's recommendations are flawed

Airtel's reasoning is flawed because of the following reasons:

- **IXPs should not be licensed because they do not provide end-user-connectivity:** IXPs are only allowing a marketplace for interconnection and transfer of data: they do not connect directly with the end consumer because they have no spectrum or end-user-connectivity infrastructure. Unlike what Airtel claims, a user cannot be provided content access by an IXP without a user getting content via an ISP. Because IXPs do not provide end-user-connectivity, and have no connectivity infrastructure of their own, only interconnection arrangements, they should not be a part of the licensing framework. As NIXI itself points out:
  "Unlike telecommunication networks, IXPs do not provide end-to-end connectivity or telecommunication services directly to end-users. Therefore IXPs does not meet the criteria for "telecommunication services"under the Act.
- **Net Neutrality concerns:** Preventing an end-user from accessing content via an IXP would **amount to a violation of Net Neutrality**, where the same content from an IXP would be treated differentially from that via an ISP hosted server.
- **Colocation-only will limit IXP role and hurt Internet connectivity**: Limiting IXPs to only providing colocation facilities and leaving peering entirely to bilateral commercial agreements among ISPs reduces the efficiency and cost-effectiveness that IXPs inherently offer. IXPs function best as neutral platforms that facilitate multi-lateral peering, optimizing traffic flow and reducing costs for all participants, including smaller ISPs that may lack bargaining power in purely commercial negotiations. While increasing the footprint of IXPs is a positive step, restricting their role to colocation and ISP-only peering limits their utility and reduces the incentive for investment. A broader framework that allows diverse participation and services will attract more players to invest in and use IXPs, fostering internet growth in underserved regions.
- **Prevention of content to content peering is an outdated approach, creates artificial bottleneck:** Prohibiting content-to-content peering at IXPs ignores the evolving nature of the internet. Modern IXPs support diverse participants, including CDNs, cloud providers, and content platforms, fostering a dynamic ecosystem. Restricting this interaction could lead to inefficiencies in content delivery, increasing latency and costs for end-users. The suggestion to prohibit content-to-content peering and focus only on ISP peering entrenches the position of dominant ISPs by forcing content providers and other entities to rely solely on ISPs for interconnection.

This creates an artificial bottleneck, limiting competition and innovation in content delivery. Even NIXI allowed content players to interconnect in 2019, much after private players did.

Airtel is trying to reinstitute a failed interconnection regime that led to the relative failure of NIXI, despite it having a first mover advantage. Thus, there is no reason to switch back to a failed regime under NIXI from one that is clearly succeeding, with market dynamics supporting the growth of private IXPs.

While others stakeholders like the ISPAI have suggested that the TRAI consider a light touch approach to IXP regulation, while at the same time suggesting that IXPs are better deregulated, we would recommend that IXPs be free from any regulatory requirement: there should be no registration, authorisation or licensing of IXPs whatsoever, and content delivery networks and datacenters should be allowed to peer with IXPs.

Any move to create a regulatory regime for IXPs would negatively impact the ease of doing business, and a failure on part of the regulatory TRAI, which has otherwise taken a more progressive approach towards Internet connectivity.

Response to Reliance Jio's recommendations on IXPs

1. **IXPs and ISPs should not have the same authorisation:** Reliance Jio, weirdly, suggests an ISP level authorisation for IXPs. IXPs and ISPs serve fundamentally different functions in the internet ecosystem. ISPs provide internet access to end-users (retail or wholesale), while IXPs facilitate B2B interconnection among network operators, content providers, and other entities. Combining these distinct roles under a single license overlooks the operational and technical differences, potentially leading to regulatory misalignment. Bringing IXPs under ISP authorization risks reducing competition and neutrality in the interconnection space. If IXPs are treated as part of ISP operations, dominant ISPs could leverage their market power to prioritize their own services or impose unfair conditions on smaller ISPs and network operators. This undermines the neutral role IXPs are meant to play.

2. **IXPs should not be subjected to the same fees as ISPs:** Reliance Jio's suggestion of subjecting IXPs to the same licensing fees and regulatory burdens is bizarre, because imposing the same license fees for IXPs their operational costs and complexity. IXPs operate on relatively thin margins compared to ISPs, and additional financial burdens could stifle their growth, and this will disincentivise IXP expansion to underserved regions where IXPs are most needed to improve connectivity.

3. **There is no regulatory arbitrage:** Reliance Jio's assertion that a separate authorization for IXPs creates regulatory arbitrage lacks substantive evidence. Regulatory arbitrage occurs when entities exploit differences between regulatory frameworks to gain undue advantages, but IXPs' narrow focus on interconnection services does not overlap with ISPs' retail and wholesale roles. Treating them as separate entities prevents potential monopolistic practices by ISPs.

Responses to other comments

1. **IXPs in underserved areas:** Encouraging IXPs in Tier-2 and Tier-3 cities is a positive step for decentralization, but mandating such setups or providing incentives could lead to unsustainable

IXPs in areas with insufficient traffic to justify their existence. Traffic density naturally dictates the need for IXPs, and artificially creating them in low-demand areas could result in underutilized infrastructure and wasted resources. Allow market dynamics to determine IXP rollout, unless there's a market failure. It's also important to consider that NIXI already has services are currently available across 27 states/ UT's including metro, Tier 2 and Tier 3 with 77 IXPs covering 62 cities. NIXI's traffic for Tier-2 and Tier-3 cities ought to be considered before taking any decisions.

2. **Commercially confidential information:** While transparency in operations builds trust, requiring IXPs to publish detailed peering agreements could expose commercially sensitive information. It should be noted that those asking for this commercially confidential information to be made public are ISPs, which also have such arrangements with IXPs. This will also impact the freedom for IXPs, in a competitive environment, to price their services, which in turn might impact their viability. We don't want to repeat the market failure that was symptomatic of NIXI.

In conclusion

https://hostingjournalist.com/news/rostelecom-and-megafon-disconnected-from-london-internet-exchange