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Mr. Sanjeev Kumar Sharma
Advisor (BB&PA)

Telecom Regulatory Authority of India
Mahanagar Door Sanchar Bhawan
Jawahar Lal Nehru Marg,
New Delhi-110002

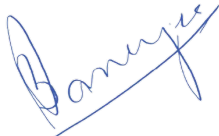
Subject: Response to Consultation Paper on “Regulatory Framework for Promoting Data Economy through Establishment of Data Centres, Content Delivery Network, and Interconnect Exchanges in India.

Dear Sir,

Please find enclosed Lightstorm Telecom Connectivity Private Limited response to the above-mentioned Consultation Paper for your kind reference, records & consideration.

Thanking You,

Your sincerely
For **Lightstorm Telecom Connectivity Private Limited**



(Authorized Signatory)

Ranjan Banerjee

Email: ranjan.banerjee@lightstormtelecom.com

Mobile No. +91 9136188888

Lightstorm Response to TRAI Consultation Paper on “Regulatory Framework for Promoting Data Economy through Establishment of Data Center, Content Delivery Network and Interconnect Exchanges in India.

Preamble

At the outset, we would like to express our sincere gratitude to the Authority to bring out this Consultation Paper for discussion on Regulatory Framework for promoting Data Economy through establishment of Data Centres, Content Delivery Network (CDN) and Interconnect Exchanges (IEX) in India. As the implementation of the same is the need of the hour, we appreciate the Authority for its regular efforts for the growth of digital infrastructure in the country. Such efforts need to be continued in the right direction for achieving national objective and meeting the rapidly growing demand for telecommunication/digital services.

Q.1: What are the growth prospects for Data Centres in India? What are the economic/financial/infrastructure/other challenges being faced for setting up a Data Centre business in the country?

Q.2: What measures are required for accelerating growth of Data Centres in India?

Q.3: How Data Centre operators and global players can be incentivized for attracting potential investments in India?

Q.4: What initiatives, as compared to that of other Asia Pacific countries, are required to be undertaken in India for facilitating ease of doing business (EoDB) and promoting Data Centres?

Q.5: What specific incentive measures should be implemented by the Central and/or the State Governments to expand the Data Centre market to meet the growth demand of Tier-2 and Tier-3 cities and least focused regions? Is there a need of special incentives for establishment of Data Centres and disaster recovery sites in Tier-2 and Tier-3 cities in India? Do justify your answer with detailed comments.

India is one of the most fastest growing Data Centre market globally and exceeded Globally. Indian data centre market is witnessing robust growth in the era of virtualization and cloud computing. The data centre market in India is expected to grow at 12% compound annual growth rate (CAGR) from 2019-2024 according to the Synergy Research Group.

The increased use of data consumption and internet bandwidth in the country is primarily driven by expanding the reach of social media and increased use of smart devices. With more and more Indian companies expected to embark on their digital transformation journeys, McKinsey has identified India as the second fastest-growing digital economy and projected that IT and communications sector will double in size by 2025 to contribute \$

355-435 billion to the GDP. COVID-19 led lockdown has accelerated the usage of data resulting in increased demand for bandwidth as well as storage capacities. The government, private sector and individuals including a large student base started using digital means to operate their business or profession. The Government of India initiatives such as Digital India and emphasis on self-reliance and data protection through data localization is expected to increase the volume of data in the country, which will result in an increased demand for the data centre and cloud services.

The some of the key contributor of data centre growth:

- a. Rising Domestic Data consumption.
- b. Migration from Captive Data Centers to Cloud by Enterprise customer.
- c. OTT Adoption
- d. Proposed Data sovereignty law.
- e. Geographical Advantage: can act as Data Center Hub for Countries in India Subcontinent.

In lieu of the impending and ongoing growth of the Data Centre Industry, the government can take the following key measures to further speed up the same.

- a. Govt may allocate land parcels for Data Centre on long term lease at a nominal cost.
- b. Stamp Duty charged may be exempted or reduced.
- c. Improving Power Infrastructure for Data Centres.
- d. Promote active infrastructure sharing in transport layer for cost and power efficiencies.

Further, we recommend the constitution of a central task force to engage with state governments to sensitize administrators to the benefits of promoting the development of a data centre market within its own state, as well as provide a bunch of incentives suitable for local data centre deployment and management. The same may be affected through the use of a central data centre policy

We also recommend the development of an index to measure data centre readiness and rank states based on availability of supporting infrastructure and forward-looking policies that improve the incentives to invest in the development of data centres and associated infrastructure.

Q.13: Whether trusted source procurement should be mandated for Data Centre equipment? Whether Data Centres should be mandated to have security certifications based on third-party Audits? Which body should be entrusted with the task? Should security certifications be linked to incentives? If so, please give details with justifications.

Trusted Source procurement is applicable only for licensees creating telecom infrastructure under section 4 of India Telegraph act 1885 therefore we understand that Data Centre players should be kept out of this ambit.

Q.14: What regulatory or other limitations are the Data Centre companies facing with regards to the availability of captive fiber optic cable connectivity, and how is it impacting the Data Centre deployment in the hinterland? How can the rolling out of captive high-quality fiber networks be incentivized, specifically for providing connectivity to the upcoming Data Centres/data parks? Do justify.

Q.15: What are the necessary measures required for providing alternative fiber access (like dark fiber) to the Data Centre operators? Whether captive use of dark fiber for DCs should be allowed? If so, please justify.

The ownership of dark fiber is considered telecom infrastructure resources which can only be utilized/Lit by the Licensees under section 4 of India Telegraph Act 1885. We also believe multiple TSPs/ISPs are already present in the Data Centres across the country. In the upcoming data centres of scale, there is enough business case for infrastructure roll-out by TSPs/ISPs and NLDOs therefore there is no Regulatory intervention required at the stage in this regard.

Consequently, companies who want to operate Data Centres would need to enter into commercial agreements with TSPs/ISPs, even if the services they provide are not competing with those being provided by TSPs/ISPs.

Moreover, we want to highlight that TSPs/ISPs and NLDOs have made huge investments to obtain license and create necessary infrastructure to meet the business demands of various enterprise customers. The need of Data Centre is not only to connect various Data Centres with each other, they also require connectivity to outside world as well.

The consultation paper has identified that **inter DC bandwidth** to be an area of concern. The NLD service providers are best placed to provide this bandwidth. However, there remains an anomaly between the Unified License (UL) and Unified License Virtual Network Operator (UL-VNO) with regards to the pass-through charges permissible for NLD services.

Unified License NLD services	Unified License VNO NLD services
UL version dated 17.01.2022 page 85	UL(VNO) version dated 17.01.2022 page 74
<i>3.2 Adjusted Gross Revenue (AGR):</i>	<i>3.2 Adjusted Gross Revenue (AGR):</i>
<i>For the purpose of arriving at the “Adjusted Gross Revenue (AGR)”, following shall be</i>	<i>For the purpose of arriving at the “Adjusted Gross Revenue (AGR)”, following shall be</i>

<p><i>excluded from the Applicable Gross Revenue (ApGR):</i></p> <p><i>a. Charges of pass-through nature paid to other telecom service providers to whose network, the Licensee’s NLD network is interconnected, for carriage of calls, and:</i></p> <p><i>b. Goods and Service Tax (GST) paid to the Government if Applicable Gross Revenue (ApGR) had included as component of GST.</i></p>	<p><i>excluded from the Applicable Gross Revenue (ApGR):</i></p> <p><i>a. Charges paid to its parent NSO(s) towards applicable access charges such as carriage charges, termination charges and roaming charges.</i></p> <p><i>b. <u>Charges paid to NSOs towards Bulk/Wholesale bandwidth, leased line and bandwidth charges</u>, minutes and SMSs. However, these charges should be governed by a written agreement, a copy of which must be provided along with the proof of actual payment for the deduction to be allowed; and</i></p> <p><i>c. Goods and Service Tax (GST) paid to the Government if Applicable Gross Revenue (ApGR) had included as component of GST.</i></p>
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While the charges paid by NLD licensee to NSOs towards Bulk/Wholesale bandwidth, leased line and bandwidth charges are permitted as pass through under the VNO license, same is not permitted under the UL license. This creates a non-level playing field and results in double levy of License Fee under the Unified License.

The above anomaly should be removed by issuing a suitable license amendment under UL to create enough competition in the inter DC bandwidth within India.

Q.16: What are the challenges faced while accessing international connectivity through cable landing stations? What measures, including incentive provisions, be taken for improving the reliable connectivity to CLS?

The current Access Facilitation Charges (AFC) is biggest hindrance to bring in IPLC to India at a reasonable cost therefore it is pertinent to mention that Cable Landing Station owners are charging indiscriminately. therefore, we urge Regulator to re-visit their earlier order dated 21st December 2012 whereby the Authority has specified following Access Facilitation Charges:

Sl. No.	Capacity	Access Facilitation Charges Per Unit Capacity Per annum (in Rs.)	
		At Cable Landing Station	At Alternate location (Meet Me Room)
(a)	STM-1	36,000	1,11,000

(b)	STM-4	93,000	2,88,000
(c)	STM-16	2,40,000	7,50,000
(d)	STM-64	6,25,000	19,50,000

In this connection, we also wish to highlight that Cable Landing Station owner's always give feasibility at Alternate location (Meet Me Room) which is almost four times cost of AFC at Cable Landing Station.

TRIA should mandate the following: -

- a. The Access Facilitation Charges (AFC) at the Cable landing station & at alternate location should be the same.
- b. The monthly reporting of demands placed, and demand fulfilled within 30 days.
- c. The financial penalty should be imposed in case of violation to the above.

These charges result in higher tariff for international bandwidth to/from India.

Further, we humbly request that Access facilitation charges (AFS) should be cost based and not capacity based. The scope of the present regulation should equally be applicable to all types of submarine cables.

Q28. What long term policy measures are required to facilitate growth of CDN industry in India?

Q33. Do you think CDN growth is impacted due to location constraints? What are the relevant measures required to be taken to mitigate these constraints and facilitate expansion of ecosystem of Digital communication infrastructure and services comprising various stakeholders, including CDN service providers, Data Centre operators, and Interconnect Exchange providers expansion in various Tier-2 cities?

1. As you are aware that CDNs are Hosted in Hyperscale Data center and /or deploying Caches at Network PoPs of TSPs / having Direct peering arrangement @ hyperscale Data centers where they are hosted.
2. In present set up – CDNs deploy infrastructure @ every operator PoP, serving the customers of that TSPs, implying multiple installation per location, and even with multiple deployments they connect to leading providers only. Such models of CDN connecting with each TSP is not scalable to get the Digital infrastructure to every corner of the country.
3. Instead CDNs are looking to deploy their infrastructure at well-connected Neutral facility; The neutral facility or Internet Exchange should be truly open and neutral where all members of the digital ecosystem (content, eyeballs, connectivity

providers) participate in an open and free manner, resulting in improved experience for their end users

4. As a long-term policy well connected Data Centers and neutral IX in tier – II towns are required to facilitate growth of CDN. The Software Technology Parks of India has Tier III data centers at Bengaluru, Bhubaneswar, Chennai, Mohali and Vijayawada. The state IT ministries have their own data centers. These government agencies may be encouraged to deploy Internet Exchange (IX) on 'not for profit' basis in each state. This will provide equal opportunity for accessing content on fair and non-discriminatory basis.

Q29. Whether the absence of regulatory framework for CDNs is affecting the growth of CDN in India and creating a non-level-playing field between CDN players and telecom service providers.

1. CDN and Telecom Player are integral part of Digital content ecosystem, both have their own play and need to co-exist.
2. Industry is seeing enhanced cooperation's & partnership between CDNs & Telcos to bundle Content & Connectivity to serve end-user.

Q30. If answer to either of the above question is yes, is there a need to regulate the CDN industry? What type of Governance structure should be prescribed? Do elucidate your views with justification.

Q31. In case a registration/licensing framework is to be prescribed, what should be the terms and conditions for such framework?

1. CDNs are comparable to Print & media/broadcast business, and if at all Govt plans to regulate this industry it should be line with comparable industry.
2. Light touch Regulation Focused to take care of matter / contents pertaining to national security, protection of minors / human dignity/ privacy, intellectual property etc.
3. Regulation may also envisage that
 - a. CDNs would provide peering / caching arrangement to all eligible service provider in non – discriminatory way
 - b. CDNs need to deploy such setups, in partnership with the ecosystem players such as IX, Interconnect/Connectivity providers, Content/Eyeball players, at all town having population of 1 million + and such infrastructure would be hosted at Neutral facility

Q32. What are the challenges in terms of cost for growth of CDN? What are the suggestions for offsetting such costs to CDN providers?

Q 35. Is there a need to incentivize the CDN industry to redirect private investments into the sector? What incentives are suggested to promote the development of the CDN industry in India?

Q36. How can TSPs/ISPs be incentivized to provide CDN services? Please elucidate your views.

The initial costs associated with establishing a CDN are quite high, while it takes time to get the returns on investment. Private investments are required to set up many CDN servers in India. Private investments are required to set up many CDN servers in India. Suitable fiscal incentives through policies can support the companies during initial investment.

Since CDNs are a popular choice to relieve some of the major pain points that come with traditional web hosting, it immensely benefits to end users (both consumers & enterprises). The CDN players are quite mature, as an industry, and would need support/incentive in bringing the content closer to the users beyond Tier-1 cities. Since CDN players are not the only 1 player in this digital ecosystem, the incentive could be shared among all participants of the ecosystem (IX, CDN, Connectivity, OTT, ISP) to make this happen.

Q 34. What measures can be taken for improving infrastructure for connectivity between CDNs and ISPs, especially those operating on a regional basis?

1. The relationship between CDN players and ISPs is that of a **mutual facilitator**. While CDN providers help ISPs in terms of helping them save bandwidth cost and in enhancing the user experience, ISPs provide the access without which CDNs cannot deliver the content.
2. While the CDN providers are investing in the server hardware, the ISP is also arranging space, power, and bandwidth for fetching cache content, etc. Thus, both the players invest in their own systems and in-process they help each other improve their commercial viability.
3. The market for the interconnection of CDNs and ISPs is at a nascent stage. There is a need to see that the market is not misused to create dominance, hurting the business of smaller players by way of arbitrary demands. Such a market may require regulatory interventions.
4. With data traffic set to grow and a limited number of players controlling a significant proportion of internet traffic, chances are there for anti-competitive agreements between CDNs, ISPs/TSPs, and internet companies.

5. To promote net-neutrality and limit anti-competitive practices, one should adopt “open & neutral Internet Exchanges” that allows all members of the digital ecosystem to have a fair play and participation. Such neutral exchanges, that are not-for-profit, remove the need for ‘policing/regulation’ by authorities as the community will further the interests of bringing internet to the masses.
6. DNS based content filtering and URL blocking allows or blocks access to the website’s or URLs as per the Government orders under Section 69A of the IT Act. In absence of any regulatory and security framework, it has been observed that few CDN providers are hosting their contents collocating them with ISP gateways through direct peering or at Private IXPs. This arrangement results into bottleneck in effective blocking of contents under the direction of Hon’ble courts or under provision of IT Act and there is possibility of by-pass of Lawful Interception system.

Q37. Are there any other issues that are hampering the development of CDN Industry in India? If there are suggestions for the growth of CDNs in India, the same may be brought out with complete details.

To provide optimum user experience to users – CDNs should have their deployments near to user and connected to all eligible Service provider, which is not happening currently due to:

1. Non – availability of Neutral facilities
2. CDNs work on asset light model and prefer to collocate at existing DC facilities
3. Even if they plan to build their PoPs, the sizing required for their solo use makes preposition economically non-viable

Q42. Whether TSPs/ISPs should be mandated to interconnect at IXPs that exist in an LSA? Do justify your response.

Q43. Is there a need for setting up IXP in every state in India? What support Govt. can provide to encourage setting up new IXPs in the states/Tier-2 locations where no IXPs exist presently?

Q44. Whether leased line costs to connect an existing or new IXP is a barrier for ISPs? If yes, what is the suggested way out? What are other limitations for ISPs to connect to IXPs? What are the suggestions to overcome them?

1. Currently all Major IX are in Metro / Tier -1 Location, so are the content providers
2. Key advantage of IX is to avoid Multi Hop Traffic Routing and Peer to Peer traffic exchange between connected parties
3. There are a few barriers for ISPs to connect to an existing or new IXP:
 - Lack of a neutral interconnect platform

- Lack of substantial number of open, neutral, not-for-profit IXP
4. **Neutral Interconnect platform:** Traditional connectivity players charge high costs given their legacy network and business models. With advancement in technology, it is possible for green field connectivity players to democratize such interconnections to be available at every datacenter and IXP locations. Such ‘Neutral Interconnect Platform’ will open access to all ISP at affordable cost to connect to the IXP wherever they are. However, the key issue here is to enable such ‘Neutral Interconnect Platform’ get access to all Datacenters without any impediment from incumbent TSP/ISPs.
 5. **Open, neutral, not-for-profit IXP:** Unless an IXP is open, neutral and not-for-profit, it cannot function effectively in the whole ecosystem to further the reach of internet. With such IXP too few in number and not available beyond Tier-1 cities, the regional ISPs are either forced to buy expensive IP-Transit or buy expensive leased lines from traditional connectivity providers. Open, neutral & not-for-profit IXPs promote “free peering” amongst “content & eyeball” players with very little barrier in terms of cost. And ‘Neutral Interconnect Platform’ play a key role in bringing ‘affordable’ connections from the ISP to such IXP.