Recommendations on Regulatory Framework for promoting Data Economy Through establishment of data centres, contents Delivery Networks and Interconnect Exchanges in India

Reference on TRAI's Consultation paper dated on 16th December 2021

Consultation Paper No. 10/2021

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IAFI notes the initiative by the Telecom Regulatory Authority of India (TRAI) to start a conversation on regulating data centres, Content Delivery Networks and Internet Exchange Points via its Consultation Paper on 'Regulatory Framework for Promoting Data Economy through Establishment of Data Centres, Content Delivery Networks, and Interconnect Exchanges in India' (TRAI Consultation Paper). IAFI and its members welcome the opportunity from TRAI to provide stakeholder feedback on the same. Below are our inputs on the same.

Introduction of the Consultation Paper

During the last two decades, in an increasingly knowledge-driven globalized world, telecommunication and the internet have emerged as key drivers of economic and social development. They have enabled better connectivity among users, increased the use of Information and Communications Technology (ICT) services, and facilitated the emergence of a variety of new business models. ICT not only contributes directly to the GDP through the production of goods and services but also spurs innovation in the ways of

production and delivery, leading to increased employment and labor productivity. India has one of the fastest-growing ICT sectors in the world, with ICTs being used to deliver critical goods and services to millions of Indians.

Communication services such as voice, video, data, Internet and wideband multimedia have become indispensable in modern society. With the proliferation of technology, for different purposes, the Government, private enterprises, and people in general are relying more and more on ICT services such as digital platforms, online content, and broadband connectivity. The digital transformation is emerging as a key driver of sweeping changes in the world around us. The telecommunication industry is at the forefront of this transformation, adding value to the Digital Economy.

Issues of Consultation

Ques 1) What are the economic prospects of data centers in India? What are the economic/financial/infrastructure/other challenges being faced for setting up a data Centre business in the country?

Answer- At the outset, we note that India is well on the path towards its goal of a 'Digital India'. This movement has been underscored by various measures intentioned to grow India's digital economy. Further, this, coupled with the rise in the reliance placed on digital and internet-based services, indicates that the forecast of the growth prospects of data centres in India is promising.

However, there are certain key issues that need to be addressed in order to accelerate the growth of data centres and attract foreign investments in this sector. These issues and challenges are as follows:

- **Data localisation and possibility of law enforcement access to foreign data:**

o The TRAI, in the TRAI Consultation Paper, has observed that data localisation will enable India to become a data hub in Asia. The TRAI Consultation Paper notes that the proposed data protection law in India empowers the Central Government to exempt from regulation companies that only process personal data of foreign nationals not present in India. The TRAI Consultation Paper views this as a positive measure which can incentivise such companies to invest in data centres in India.

o While we appreciate this observation, the draft Data Protection Bill, 2021 (**DP Bill 2021**) currently does not expressly consider the case where personal data may be located in India due to localisation requirements but could be subject to the laws of the country in which such data originated. Further, the DP Bill 2021 also does not address the possibility of government access to such data, in a way that overrides the protections provided to personal data in other jurisdictions.

o The direct implication of the above is that the DP Bill 2021 does not contain provisions that prevent government access to data of foreign nationals stored in India. The absence of this protection can result in a scenario where the protections provided to personal data in other jurisdictions are overridden, potentially affecting user rights, as well as companies'

compliance with domestic laws of other jurisdictions. This may, in turn, hinder the ability of cloud service providers and other entities to locate their servers in India as foreign jurisdictions may bar them from doing so on account of data security concerns (for instance, due to the inability to get approval from foreign jurisdiction regulators to store data in India owing to concerns such regulators may have about protection of their citizens' data).

o We believe that this issue should be urgently raised by the TRAI before relevant fora, specifically the Ministry of Electronics and Information Technology (**MEITY**), before the DP Bill 2021 is enacted by the Parliament of India.

- **Incentives to foreign companies and inclusion as a stakeholder:** The TRAI Consultation Paper has elaborated on the different incentives (both fiscal and non-fiscal) provided by States across India to promote the setting up of data centres. However, we would like to reiterate the need to ensure that such incentives are equally extended to foreign companies and foreign start-ups looking to establish data centres in India. This will enable ease of doing business and contribute to India's image as an attractive investment destination. Further, since foreign companies can become key major players in boosting the data centre economy in India, it is vital to ensure that they are equally involved in all future regulatory and policy initiatives on data centres, which may take place through government meetings and public consultations, or be undertaken by a nodal agency that is eventually established to oversee the data centre sector in India (please refer to our response in Question 23 below).

In addition, the government is increasingly reliant on data centres for the Government-to-Citizen (G2C) delivery platforms, such as the National e-Governance Plan (NeGP), e-visa, and National CSR Data portal to name a few.

At present, the data centre industry is very buoyant in cities such as Mumbai, Chennai, NCR, Bangalore, Hyderabad, and Pune. India holds immense potential to become a data centre hub in APAC owing to the availability of high bandwidth speed, lower power tariffs and presence of hyper scalers. Additionally, availability of state-of-art infrastructure are likely to fuel the growth of India's data centre market. New business models are merging in this business, including colocation services, pay-per use utility model, built to suit, etc. Finance Minister Nirmala Sitharaman recently announced that the government is planning to roll out a data centre policy enabling the private sector to establish data centre parks in the country. "Data is the new oil" she said. Many state governments such as Maharashtra, Telangana and Tamil Nadu are already offering several incentive schemes for setting up data centre parks in their states.

Ques-2) What measures are required for accelerating growth Data Centres in India?

Answer- Key measures that would help bolster the growth of data centres in India include:

- **Creation of data centre parks / economic zones:**

o Enabling the creation of dedicated data centre parks or data centre economic zones. Data centre parks / zones should be provided exemptions from stringent regulatory and legal requirements. Such exemptions can relate to, and include, promoting FDI, granting tax holidays, as well as exemptions from law enforcement data access where data stored in a domestic data centre is owned by a foreign entity.

o Further, data centre parks / zones should be pre-provisioned. For example, they should have high-capacity fibre networks, uninterrupted power supply, dual power grids, and on-site power plants.

- **Regulatory measures to promote ease of doing business:**

o Priority land allocation and relaxed building norms (especially for greenfield projects) should be provided to data centres. Tailored specifications for data centres via the National Building Code can also be introduced.

o Providing an 'infrastructure' status to data centres (thus conferring benefits such as improved access to financing), flexible labour laws (particularly avoiding mandating a fixed percentage of local staff), single window clearance systems and harmonious Centre-State policies, usage of state-of-the-art equipment (even if manufactured abroad) with no import taxes for such equipment, intellectual property safeguards, sharing of infrastructure, such as passive infrastructure, with data centres by IP-1 companies, and incentives for efficient energy usage should be enabled / promoted to ease compliance and decrease costs.

o Disaster recovery sites and security / encryption certifications and standards for data centres should be established in order to ensure that foreign companies are able to avail a safe / secure physical environment for storing data in India.

o Lastly, the TRAI may also promote the setting-up of high-quality telecom infrastructure, such as fibre connectivity, which is an essential requirement for the smooth running of data centre operations.

Ques 3) How Data Centre operators and global players can be incentivised for attracting potential investments in India?

Answer- An overall flexible policy environment, containing incentives – such as tax breaks and limited regulatory interference – can help attract foreign investments in the data centre industry in India. The policy environment should also promote competition and allow entry of new players. Further, reliance may be placed on the measures highlighted in our response to Question 2 above.

The government is targeting an investment of Rs. 3 lakh crores in the next five years as a part of the hyperscale data centre, scheme and is planning to provide between 3% and 4% of capital investment as incentive to companies, along with real estate support and faster clearances. The data centre market in India is expected to grow at 12% compound annual growth rate (CAGR) from 2019-2024. Data Center customers aren't the only stakeholders that are focused on sustainability. Investors also will be a part of a green revolution

Ques 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?

Answer The TRAI Consultation Paper has recognised initiatives taken by Asia-Pacific countries such as Singapore and Malaysia in order to promote themselves as viable data centre destinations. We would particularly like to bring forth the success of Singapore's initiatives on this front. Singapore has gained the status of being a data centre hub because of the following factors:

- Singapore has extensive subsea / submarine cable networks, skilled workforce, low rates of natural disaster, a stable political environment, relatively lower tax rates, and a business-friendly eco-system;

- Data centre parks in Singapore are fully equipped with adequate infrastructure. For example, they have dual power feeds, redundant systems of cooling and network path diversity to ensure that data centre operations are not compromised in case of failure, supporting infrastructure that is scalable for "plug and play" deployment, and readily available tracts of land to help reduce capital expenditure and other allied operating costs;

- Singapore has established standards for data centres for better energy management and information security; and

- Singapore has taken the initiative to develop innovative and sustainable cooling solutions for data centres located in tropical locations to promote low energy consumption and costs and reduce carbon footprint.

Lessons can be learnt from the example of Singapore above, especially given that many of the factors that make Singapore a viable destination are already present in India (such as subsea cable networks, skilled workforce, emphasis on promoting ease of doing business, etc.).

Ques 5) What specific incentive measures should be implemented by the Central and/or the state Governments to expand the Data Centres 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.

Answer-No Comments

Ques-6) Will creation of Data Centre Parks/Data Centre Special Economic Zones provide the necessary ecosystem for promoting setting up of more Data Centres in India? What challenges are anticipated/observed in setting up of Data Parks/zones? What

facilities/additional incentives should be provided at these parks/zones? Do give justification.

Answer- Yes, creation of Data centre parks/Data Centre Special Economic Zones will provide the necessary ecosystem for promoting more data centres because, data centres are specialised secure data zones, strategically located with the most conducive non-IT and IT infrastructure, and regulatory environment for housing a mix of small scale/large scale clusters of Data Centers to serve the high needs of compute, storage, networking, and provision of a wide range of data-related services. One such benefit is the "plug and play" model wherein such parks / zones provide companies with the necessary infrastructural support and the ability to scale their operations within short timelines. Such benefits should be coupled with regulatory support that is generally provided to special economic zones in the country – such as tax exemptions and single window clearance systems.[1]

Furthermore, to increase the country's technological comprehensiveness, a focus on building Disaster Recovery (DR) Data Center infrastructure, edge Data Centers in Tier-2 and Tier-3 cities needs to be prioritized. Other considerations that should be accounted for while setting up designated data centre parks / zones in India include:

- Assessing seismic and climatic conditions of the geographic location for these parks / zones;
- Providing concessional rates for acquiring land;
- Ensuring proximity to local content delivery networks (**CDNs**) / internet exchange points (**IXPs**);
- Ensuring grant of permission for private captive power plants to self-manage electricity requirements and enabling use of renewable sources of energy;
- Enabling ease of access to telecom infrastructure (such as optical fibre networks) without the need to enter into agreements with licensed entities, such as telecom service providers (**TSPs**); and
- Promoting access to rights-of-way and establishing common service ducts and utility corridors for fibre connectivity.

Ques 7) What should be the draft board guidelines to be issued for Data Centre buildings, so as to facilitate specialized construction and safety approvals?

Answer- At the outset, the technical implementation of data centres and cloud computing services should not be subject to regulation. Rather, areas of concern such as cybersecurity, data protection, and network information services should be addressed in legislation as appropriate in a technology-neutral manner.

That said, the Government can assist in the promotion of the setting up of data centres by providing industry-recognised best practices or guiding principles to help design data centre facilities. These guiding principles / best practices can relate to the following areas:

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[1] See http://sezindia.nic.in/cms/facilities-and-incentives.php.

- Recommending data centre building designs and its details (such as single-story, vertical expansion, etc.);
- Having a draft design or floor plan ready for use, as well as rack space layout or design, after estimating the general space and power requirements of a data centre building;
- Providing an assessment of the level of fault tolerance for each design specification;
- Ensuring appropriate planning and placement of critical building systems (such as security systems, power sources, heating, ventilation and cooling systems, etc.) and
- Recommending sites for back-up data centres / disaster recovery sites.[2]

Question 8) Is there a need to develop India-specific building standards for construction of data Centres operating in India? If yes, which body should be entrusted with the task? Do provide detailed justification in this regard.

Answer-NC

Ques 9) Till India-specific standards are announced, what standards should be followed as an interim measure?

Answer- NC

Ques 10) Should there be a standard-based certification framework for the Data Centers? If yes, what body should be entrusted with the task?

Answer- Data centres are becoming increasingly complex not only to manage but also to design. Modern data centres are taking advantage of innovations in cooling, power, and other systems to make facilities more efficient. The Data Center Design Consultant (DCDC) certification offered by BICSI fits perfectly with this trend by providing anyone involved in planning, implementation, and critical decision making with advanced knowledge and expertise.

Like the DCDC, the Registered Communications Distribution Designer (RCDD) certification is focused on design. However, this credential is specific to telecommunications and data communications technology and related infrastructure for building design. Expertise in these areas is becoming more critical for data centre design and infrastructure as new facilities, ranging from new enterprise data centres to edge sites, are built.

Data centre certifications are an effective tool for both industry professionals and organizations to gain the skills they need for modern data centre management. Whether you're looking to advance your career or address knowledge gaps of your team, data centre certifications and training courses can help you achieve your goals. The new credentials will help you gain

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[2] See 'Best Practices and Guidelines to Physical Security of the State Data Centre', at https://www.meity.gov.in/writereaddata/files/Annexure-1_sdc.pdf; 'Use Best Practices to Design Data Center Facilities' (Gartner), at https://www.it.northwestern.edu/bin/docs/DesignBestPractices_127434.pdf.

knowledge and expertise, acquire new skills, and ultimately improve data centre management in your organization. However, these requirements should not be made too burdensome (especially to smaller players) as this would have the unintended effect of prematurely handicapping India's fledgling data centre industry.

Ques 11) Should incentives to Data Centers be linked to the certification framework?

Answer- Data Centre companies should be allowed to avail incentives under available schemes based on the time period of actual investment, regardless of whether the investment is in a new data centre project or an existing data centre project.

Ques 12) Are there any specific aspects of the disaster recovery standard in respect of Data centers that need to be addressed? If so, then provide complete details with justification

Answer- NC

Ques 13) Whether trusted source procurement should be mandated for Data Centre equipment? Whether Data Centers 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.

Answer-NC

Ques 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 centers/data parks? Do justify.

Answer- Infrastructure sharing at the wholesale level will ultimately facilitate greater competition at the retail level encouraging better quality of service and lower costs for consumers and business. Broadband infrastructure, especially in rural areas, is often prohibitively expensive for any single operator to deploy; consequently, such infrastructure is never deployed, and consumers are left without any service (and certainly do not have access to multiple, competitive service options). Operators can overcome this obstacle by sharing infrastructure on a wholesale basis — and effectively sharing the associated costs.

The Government can facilitate faster and less expensive deployment of connectivity infrastructure by encouraging passive infrastructure sharing, accompanied by streamlined licensing processes and fees for granting rights-of-way (including faster timing of such procedures and processes), and removing other regulatory barriers to entry. Active infrastructure sharing may also promote innovations and investment where it would otherwise not be economically feasible, such as in rural communities.

We encourage the Government to pursue policies that lower the cost of infrastructure deployment while maintaining the benefits of competition. Examples include:

- Policies promoting access to rights-of-way, and
- Policies promoting the sharing of passive infrastructure (and active infrastructure sharing in unserved rural areas) to drive down costs and spur investment by adopting incentives for sharing license obligations and a "dig once, build once" business and policy model that encourages providers to share the costs of deploying and maintaining connectivity infrastructure

Ques 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 DC's should be allowed? If so, please justify.

Answer- NC

Ques 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?

Answer- In some countries, particularly in emerging markets, access to international capacity is controlled by monopoly operators that charge excessively high prices to mobile network operators (**MNOs**) and internet service providers (**ISPs**) in order to generate revenues. These high costs are in turn passed along to the MNO/ISP's customers, creating a vicious cycle of unaffordability and limited demand.[3]

Regulators can break this cycle and attract investment by enacting laws and advancing policies that promote competition, lower interconnection costs, allow for new entrants, and recognize advancements in new business models and technologies? As aptly noted by the U.N. Task Force on Financing ICT, "*the explosion of ICT sector investment in most developing countries correlates closely with an improved environment for private investment to take place and the transformation of formerly closed, monopoly ICT markets to allow competitive entry. Where Governments have actively pursued an open, equitable market environment, investors have generally welcomed the opportunity to compete.*"[4]

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[3] Ewan Sutherland, *Undersea cables and landing stations around Africa: Policy and regulatory issues*, at https://www.econstor.eu/bitstream/10419/101381/1/795363087.pdf at 2, 16.

[4] See ICT Regulation Toolkit, at https://digitalregulation.org/wp-content/uploads/ITU_Infodev_WB_ICT_Regulation_Toolkit.pdf at 1.3.2.

Policymakers can update their competition, consumer protection, and telecom licensing frameworks to create investor-friendly environments by taking the following steps:

- **Exempt or reduce licensing requirements for private networks:**[5] A private network operator does not provide transmission capacity or services to customers, but instead uses the private network for its own purposes. Because these networks are not providing traditional telecommunication services to companies or consumers, or participating in any market for these services, regulations applicable to public networks are not appropriate for private networks. Private network operators should be able to own and operate their own fibre under an exemption from telecoms licensing requirements, both within the country and even for terminating a subsea cable in the country, provided it is always for private use.

o European Union (**EU**) countries, for example, do not require private networks to comply with the same authorisation conditions as public electronic communications network operators. This makes it easier for private network operators to invest in local and international infrastructure, which benefits the EU countries as these businesses can transition to a digital world.

o Likewise, cable landing station (**CLS**) facilities themselves should not be regulated as public telecom facilities. Reasonable regulatory and security obligations should be limited to a licensed carrier's operation of public telecom networks using those facilities, rather than the mere ownership of particular facilities.

- **Allow for private investment (including foreign investment/ownership):** Allow private investors (including foreign investors) to land cables, and to invest in, own, and operate CLS and carrier neutral colocation (**CNC**) facilities.[6] Restrictions on foreign ownership should be avoided.

o Providing maximum flexibility will attract investment. Conversely, imposing restrictions on types of ownership, including capping foreign ownership or imposing local partner requirements, could cause investors to evaluate whether the additional burdens/costs outweigh the benefits of the investment.[7]

- **Avoid monopoly situations at CLS and CNC facilities:** Where control over CLS and CNC facilities resides with very few players, the costs will inevitably be higher and the service levels lower due to lack of

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[5] A private network is typically built and operated by a company exclusively for use by and between its own subsidiaries. The private network transports data between company locations for the purpose of its internal tools, machines and processes. Cloud computing providers, for example, use private networks to connect their data centres. Content providers also use private networks to bring content closer to local telecommunications companies so it is faster and more cost effective for the telecommunications companies to deliver this content to their customers at their homes and businesses.

[6] Portugal Study at 32-34.

[7] See Google APAC Study at 63 ("Foreign ownership equity caps could have implications in relation to the viability of the business case and operating model of a submarine cable venture").

competition, which ultimately is passed on to consumers. Furthermore, these players are unlikely to invest in innovative new technology if they face no business threat or competition, which deprives the country of valuable opportunities (e.g.: getting more bandwidth from a subsea cable via spectrum sharing technology advances). Regulators can help avoid monopoly situations and other abuse at CLS and CNC facilities by:

o Opening CLS and CNC facilities to private and foreign investment.
o Where an incumbent operator controls a CLS or CNC facility, imposing conditions on that operator to provide access to the facility in an open, reasonable, transparent and non-discriminatory manner using published rates and terms.
o Exercising active regulatory oversight over incumbents and policing against carrier policies restricting/prohibiting entrance, imposing prohibitive or non-competitive pricing, or creating other barriers to entry/interconnection.[8]
o Providing incentives (tax breaks, fee waivers, etc.) to encourage open access to such facilities.
  - **Ensure easy and reasonable cross-connects:** Establishing connections between public networks and between public and private networks should be simple, inexpensive, and ubiquitous.

o Cross-connect is not a bandwidth service but is rather a cable/jumper to interconnect two parties. High or rate-dependent cross-connect fees can inhibit the goal of providing low-cost capacity in the end-to-end supply chain. Regulation of incumbents should ensure that cross-connect fees are nominal and that any other terms are transparent, fair and non-discriminatory.
o Licensing of cross connects inhibits dynamic network growth. Any necessary oversight can be achieved through regulation of public telecom networks, which act as gatekeepers for data flowing to users within the country.
  - **Ensure reasonable land and power costs for CLS/CNC:** Promulgate regulation, tax incentives or other measures that will help ensure that the costs of land and power for CLS/CNC are reasonable and market-based; provide tax breaks for open CLS and CNC operators and provide access to developmental funds for obtaining land on a long-term lease.

o Prohibitive site costs can sink business cases or require paybacks through higher network costs, defeating the purpose of a healthy ecosystem. This best practice will help encourage the digital transformation of underdeveloped areas and ultimately accelerate access to lower cost internet for residents of the region.

Ques 17) Is the extant situation of power supply sufficient to meet the present and futuristic requirements for Data centers in India? What are the major challenges faced by Data Centre Industry in establishment of Data centers in naturally cooled regions of India? What are the impediments in and suggested non- conventional measures for ensuring continuous availability of power to companies interested in

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[8] See Google APAC Study at 62.

establishing Data centers in the country? What incentivization policy measures can be offered to meet electricity requirements for Data centers?

Answer- NC

Ques 18) Should certification for green data Centers be introduced in India? What should be the requirement and which body may look after the work of deciding norms and issuing certificates

Answer- NC

Ques 19) Are there any challenges/restrictions imposed by the States/DISCOMs to buy renewable energy? Please elaborate. Please suggest measures to incentivize green Data centers in India?

Answer- NC

Ques 20) What supportive mechanisms can be provided to Data Centre backup power generations?

Answer- NC

Ques 21) Availability of Water is essential for cooling of Data centers, how the requirement can be met for continuous availability of water to the Data centers? Are there any alternate solutions? Please elaborate.

Answer-NC

Ques 22) Whether the existing capacity building framework for vocational or other forms of training sufficient to upskill the young and skilled workforce in India for sustenance of Data Centre operations? What dovetailing measures for academia and industry are suggested to improve the existing capacity building framework, and align it with the emerging technologies to upskill the workforce in India?

AnswerNC

Ques 23) Is non-uniformity in state policies affecting the pan-India growth and promoting of Data Centre Industry? Is there a need for promulgation of a unified Data Centre policy in India, which acts as an overarching framework for setting Data Centers across India? What institutional mechanisms can be put in place to ensure smooth coordination between Centre and States for facilitating DC business? Do you support your answers with detailed justification?

Answer- As observed in the TRAI Consultation Paper, currently there are varied policies implemented by different States to promote themselves as viable data centre destinations. Further, data centres are subject to various legal frameworks, such as those relating to infrastructure, taxes, commerce, labour and electricity. Since these areas either fall within the sole jurisdiction of States or within the concurrent jurisdiction of the Centre and States,

differences in policies across the Centre and States are likely to lead to regulatory ambiguity / complexity. This ambiguity / complexity may act as a disincentive for companies, particularly foreign companies, to foray into the data centre industry in India. Given that establishing a data centre is a a major financial investment for a company, it is vital to ensure uniformity in the country's laws and regulations governing data centres.

A possible measure to achieve a degree of uniformity is setting up an institutional mechanism, such as a nodal body or agency to facilitate the implementation of uniform best practices and principles relating to data centres. Such an agency should have participation from both the Central Government, as well as State Governments, represented by the relevant Ministries. In this regard, we note that the MEITY, in its draft Data Centre Policy 2020, suggested two nodal bodies, i.e., an Inter-Ministerial Empowered Committee and a Data Centre Facilitation Unit to oversee matters relating to data centres and evolving Centre-State coordination. While this is a notable suggestion, the TRAI and the Government should ensure that any future policy initiatives on data centres are a result of public deliberation that involve the relevant stakeholders, including internet companies, content providers, CDNs, etc. Such efforts will help facilitate the ease of doing business in the data centre sector in India.

Ques 24) What practical issues merit consideration under Center- state coordination to implement measures for pan-India single window clearance for Data Centers?

Answer-NC

Ques 25) Is there a need for Data Centre Infrastructure Management Systems (DICM) for Data Centers in India? What policy measures can be put in place to incentivize Data Centre players to adopt the futuristic technologies? Elaborate with justification

Answer- NC

Ques 26) What intuitional mechanism needs to put in place to ensure digitization of of hard document within a defined timeframe?

Answer-NC

Ques 27) Would there be any security/privacy issues associated with data monetization? What further measures can be taken to boost data monetization?

Answer- NC

Ques 28) What long term policy measures are required to facilitate growth of CDN industry in India?

Answer- Telecom providers and content providers already collaborate on a voluntary basis. The collaborations facilitate efficient delivery of high-quality services and content to users in India, which has greatly benefited the country's digital economy.

Several content providers invest and contribute in international links, CDNs, caching, peering and improving content distribution, which reduces the cost to end-users and improves network performance for telecom operators on such providers' websites/platforms. The deployment of these network elements is the result of voluntary and mutually beneficial partnerships driven by technical necessities and commercial considerations.

We respectfully recommend any guidance provided for the telecommunications industry to manage and promote content delivery service development should ensure that the relationship between content providers and MNOs/ISPs is based on voluntary partnerships. This gives the relevant parties the flexibility to adapt arrangements to constant changes that occur in internet traffic and corresponding business models. This will also ensure the success of the relationship between MNOs/ISPs and content providers, allowing for the continued growth of the internet, meeting demands for connectivity and boosting India's digital economy.

Ques 29) Whether the absence of regulatory framework for CDN's is affecting the growth and creating a non-level playing field between CDN players and Telecom service providers?

Answer- Regulations concerning CDN's and their allied operations (such as caching) should be approached carefully in order to avoid harmful disruption to legitimate content delivery, to augment the quality of experience of end-users, and to further reduce the cost of carrying and delivering traffic for content providers and licensed operators. At this stage, given that the CDN industry in India is still developing, onerous regulatory frameworks should be avoided. Further, it is worth noting that the CDN industry across the world has largely been growing, in India and globally, in the absence of regulations, with most countries adopting light touch or minimal regulation (as also observed in the TRAI Consultation Paper).

Ques 30) If answer to ether 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.

Answer- NC

Ques 31) In case a registration/licensing framework is to be prescribed, what should be the terms and conditions for such framework?

Answer-NC

Ques 32) What are the challenges in terms of cost growth of CDN? What are the suggestions for offsetting such costs to CDN providers?

Answer- As identified by the TRAI Consultation Paper, one of the major hurdles to setting up new CDN operations are the high operational and infrastructural costs associated with the same. We suggest a few ways on which these costs may be trimmed through policy measures:

The geographic placement of caching/edge servers should be flexible (for instance, not restricted to IXPs) in order to minimise transit and bandwidth costs;

- Since ISPs/TSPs form a major part of the CDN ecosystem, their licence fees/charges (for example, the NLD licence fee) should be revisited in order to ensure that these costs do not trickle down to: (i) companies, especially start-ups, that rely on CDN services for their functioning, or (ii) end-users; and

- Until CDN operators and allied stakeholders are able to achieve economies of scale vis-à-vis their presence and operations in India, the Government may consider offering certain rebates (such as tax allowances, ensuring there are no onerous regulatory requirements for CDNs, and license fee exemptions for TSPs that operate CDNs) in order to ease their compliance burden and ultimately promote the setting up of CDNs in India.

Ques 33) 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 services comprising various stakeholders, including CDN service providers, Data Center operators, and Interconnect Exchange providers expansion in various Tier-2 cities?

Answer- NC

Ques 34) What measures can be taken for improving infrastructure for connectivity CDN's and ISP's especially those operating on a regional basis?

Answer- Regulators can lower the cost of building networks to cover the 'uncovered' by aiming to:

Adopt policies that lower the cost of infrastructure rights-of-way access, including through policies that:

- o Promote the sharing of passive infrastructure to drive down costs and spur investment (e.g.: "dig once, build once" business and policy models that encourage providers to share the costs of deploying and maintaining connectivity infrastructure);
- o Facilitate faster and less expensive deployment of internet infrastructure by streamlining the local licensing process, reducing other legal barriers to entry, and establishing a single, cohesive rights-of-way framework, which would enable rapid rollout of networks;
- o Provide access to public rights-of-way at no more than the incremental cost of maintaining the same;
- o Grant tax incentives to accelerate internet deployment and adoption; and

o Support policies that reduce transit costs, improve network capacity and improve end-user experience — e.g.: encouraging more IXPs and lowering cost peering.

- **Improve regulatory predictability.** Reducing uncertainty for stakeholders by adopting frameworks that are clear and transparent and by enforcing these frameworks in a predictable and fair manner. Regulatory processes must provide commonly known decision-making procedures to govern the definition, assertion, and defence of the interests of all stakeholders.

- **Develop and implement broadband strategies.** Defining and regularly refreshing national (and State) broadband plans that include approaches for achieving affordable broadband access will be helpful in aligning resources and policies within relevant jurisdictions.

- **Lower data costs for consumers.** This can be accomplished by, among other things, (i) promoting choice through competition; and (ii) encouraging new business models that will benefit consumers and competition.

- **Promote competitive markets.** To create a more vibrant internet marketplace with more choice for consumers, policymakers should foster a competitive environment for access providers and content providers alike, including by: (i) reducing financial, legal and regulatory barriers to entry; and (ii) avoiding burdensome and unnecessary regulation of internet content, services, and applications.

- **Practice transparent and accountable policymaking processes in order to build public trust.** Transparency is achieved by providing stakeholders timely, accessible, and actionable information relevant to their rights and interests. Accountability is achieved through policies that make governments and regulators answerable for their actions and decisions.

- **Provide universal service support.** Subsidize rural broadband internet access, which would otherwise be uneconomical, with general government funding that is competitively bid for rather than taxing internet access or telecommunications services to drive down overall costs.

Ques 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?

Answer- The prevalent regulatory framework can have a significant impact on whether, how, and the rate at which we are able to deploy these types of projects and technologies.

- Indeed, the growth and vibrancy of the global internet depends on an enabling regulatory and policy-making environment. It is this structure that will determine the impact of investment to development outcomes.

- **First,** it is necessary to have rules and policies in place that encourage broadband deployment and facilitate access to broadband.

  o **We should adopt policies that lower the cost of infrastructure rights-of-way access, such as, for example,** promoting the sharing

of passive infrastructure to drive down costs and spur investment (e.g.: "dig once, build once" business and policy models that encourage providers to share the costs of deploying and maintaining connectivity infrastructure).

- **Second**, it is important to reduce regulatory barriers that make investments in connectivity expansion difficult. In this sense, reviewing and eliminating, where possible, red-tapism related to the provision of telecom services and the deployment of passive infrastructure across the globe should be a key objective. Excessive bureaucracy makes it difficult for new players to enter the market.

- **Third,** reducing burdensome and unnecessarily complex regulation and adopting a flexible regulatory model of partial de-regulation for the telecom sector is needed to decrease the regulatory costs for telecom provision.

  o Such a flexible model should be able to, at the same time, (i) keep up with the fast-changing dynamics of markets and technologies, (ii) create the necessary regulatory stability, important for private investments, and (iii) encourage alternative business approaches, thus increasing the level of competition.

- **Fourth,** it is critical to have policies that are focused on the reduction of connectivity and broadband costs (both fixed and mobile) for end-users.

  o One way to achieve this could be by increasing operating efficiency with actions like infrastructure or spectrum sharing.
  o Another could be reducing the cost of international connectivity for developing countries with innovative technologies (like satellite), or by establishing regulatory principles for areas where cost of connectivity is much higher (like rural areas).

Ques 36) How can TSP's/ISPs be incentivized to provide CDN services? Please elucidate your views.

Answer- We note that TSPs/ISPs have an inherent advantage to provide CDN services over other traditional CDN operators (who, for example, may have to incur costs to utilise a TSP/ISP's bandwidth). This is because TSPs/ISPs typically already have the requisite network infrastructure in place, as well as have a direct relationship with content providers and control over last-mile delivery of content to end-users. Further, we believe that one way in which TSPs/ISPs can be incentivised to provide CDN services is by introducing tax and license fee exemptions for TSPs/ISPs that operate CD   Ns.

Ques 37) Are there any ither issues that are hampering the development of CDN Industry in India? If there are suggestions for the growth of CDN's in India, the same may be brought out with complete details.

Answer- NC

Ques 38) Do you think that presently there is lack of clear regulatory framework/guidelines for establishing/operating Interconnect Exchanges in India?

Answer- NC

Ques 39) What policy measures are required to promote setting up of more Internet Exchange Points (IXPs) in India? What measures are suggested to encourage in the IXP market?

Answer- As noted by TRAI Consultation Paper, IXP's play a crucial role in promoting acess to the internet and online content in particular. The presence of local IXPs is beneficial as they enable change of traffic between different network operators, content providers, etc. without having to rely on international connectivity. Further, we note that the benefits of local IXPs include lower costs of traffic exchange, lower latency, and improved quality of online services.

In order to promote the setting up or more IXPs in India and to encourage competition within the sector, the following measures may be taken:

- There should be clarity in the licensing regime for operation of IXPs. Licence conditions typically imposed on TSPs/ISPs should not extend to IXPs because of the fundamental differences between them, i.e., IXPs are not designed to provide internet or telecom services to consumers, but rather primarily enable seamless exchange of traffic;[9]

- There should also be regulatory clarity to ensure that IXPs are beyond the purview of content blocking and monitoring laws given the nature of their functions;

- Equal treatment should be accorded to private IXPs established in India and Government-backed IXPs – such as the National Internet Exchange of India (*NIXI*). This will be essential to attract foreign investment and promote India as a viable destination for the setting up of IXPs. This, in turn, will significantly reduce reliance placed by private players on international IXPs, thereby lending to the growth of the domestic ecosystem in the long-run;

- While the NIXI has now enabled participation of CDNs to peer, it is important to expand its scope to enable participation from other stakeholders as well, such as content providers.

- The success behind international IXPs – such as the Singapore Internet Exchange and the London Internet Exchange – is that their operations are built on trust and financial transparency. Incorporating suitable policy measures to ensure this in domestic IXPs will help scale peering and the proliferation of IXPs across the country.

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[9] See 'Internet Exchanges In India: A Legal Anomaly', at https://www.mondaq.com/india/it-and-internet/1087262/internet-exchanges-in-india-a-legal-anomaly#:~:text=After%20accepting%20the%20recommendations%2012,in%20India%20in%202003.%2013.

- The Government should also consider introducing strategies to promote the setting up of IXPs in tier-II cities and other regions where investments are generally not regarded as being economically feasible. This can be done by enabling companies interested in setting up local IXPs to use Government resources and avail land subsidies and tax incentives. The Government can also promote workforce-training opportunities to increase employability in the operations of IXPs, and ease rights-of-way restrictions to lay down local fibres. Further, broadband digital development plans can also be devised to increase demand for internet access across towns and rural areas, functioning as a major incentive to set up IXPs in such areas.[10]

Ques 40) Whether there is a need for separate light-touch licensing framework for IXPs in India? If yes, what should be the terms and conditions of suggested framework? Do justify your answer.

Answer- In light of the significant role played by IXP's in the internet ecosystem, it is essential to promote their growth in India. The importance of such growth is even more significant for India given the unique advantages India offers in terms of geography and the benefits of setting up IXPs in an emerging data hub.

In order to promote the establishment of IXPs in India, it is important to create an enabling policy environment and avoid placing stringent regulatory restrictions on this sector. Onerous regulatory compliances and restrictions may result in deterring ISPs, CDNs and content providers from exchanging traffic within India's borders, thus hampering their organic growth in India. Further, if licensing conditions are extended to IXPs, private companies (which are generally beyond the purview of telecom regulation), particularly foreign companies, not having appropriate licenses or registrations may be deterred or prevented from operating domestic IXPs. This will significantly impact the growth of the sector. Accordingly, at the moment, a licensing framework should be avoided for IXPs, given that they primarily function as a 'transit zone' to enable free flow of internet traffic across borders.

Ques 41) What business models are suitable for IXPs in India? Please elaborate and provide detailed justifications for your answer.

Answer-

Ques 42) Whether TSPs/ISPs should be mandated to interconnect at IXPs that exist in an LSA? Do justify your response.

Answer-

Ques 43) 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?

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[10] See Internet Society's report on 'Middle East and North Africa Internet Infrastructure', at https://www.internetsociety.org/wp-content/uploads/2020/09/Middle_East_North_Africa_Internet_Infrastructure_2020-EN.pdf.

Answer-

Ques 44) 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?

Answer-

Ques 45) Is the cost of AS Number allocation an impediment for small ISPs to connect to IX? If yes, what is the suggested way out?

Answer-

Ques 46) What other policy measures are suggested to encourage investment for establishing a greater number of IXPs? Any other issue relevant with IXP growth may be mentioned.

Answer-

Ques 47) How can the TSPs empower their subscribers with enhanced control over their data and ensure secure portability of trusted data between TSPs and other institutions? Provide comments along with detailed justification

Answer-

Ques 48) What is the degree of feasibility of implementing DEPA based consent Framework structure amongst TSP's for sharing of KYC data between TSPs based on subscriber's consent?

Answer-

Ques 49) Are there any other issues related to data ethics that require policy/regulatory intervention apart from the issues that have already been dealt with in TRAI's recommendations on the issue of 'Privacy, Security and ownership of the Data in the Telecom Sector' dated 16th July 2018 and the draft PDP Bill? Provide full details.

Answer- At the outset, we would like to urge the TRAI refrain from issuing guidance or policy measures on data privacy and protection until the DP Bill 2021 (which is currently under an advanced stage of Parliamentary / Governmental review) is enacted into law. This will help avoid any regulatory ambiguity or complexity that may inevitably arise due to a plethora of disparate measures relating to data privacy. Moreover, once India's data protection law comes into force, all stakeholders within the internet ecosystem that process personal data will come under its fold.

That said, we recommend that the TRAI engage with the Government on the following issues:

- **Data localisation:** We understand that there is a regulatory push towards data localisation. However, we would like to reiterate our

position that cross-border data flows play a crucial role in enabling the digital global economy. Such data flows should be encouraged and issues of data access should be harmonised with the goal of incentivising data storage in India (and eventual establishment of India as the next data centre hub of the world). Burdensome regulatory compliances due to overarching government access provisions would affect foreign companies' willingness to set up data centres in India, by ultimately affecting their ability to comply in other jurisdictions and/or affecting their consumer commitments. Accordingly, there should be adequate safeguards to allow foreign companies to remain compliant with their cross-jurisdictional compliances. This should be achieved by establishing clear norms relating to government access to data stored in India by foreign companies.

- **Testing of hardware:** We note that the Joint Parliamentary Committee Report on the DP Bill 2021 has observed that there should be a certification mechanism to ensure the integrity of 'digital devices' (an undefined term) in the interests of data security. It has recommended that dedicated labs / testing facilities be set up to certify all digital devices. To this extent, the proposed regulator, namely the Data Protection Authority, has now been empowered to ensure monitoring, testing and certification of hardware devices to prevent malicious attacks. We urge that before such compliances are implemented, it is important to ensure that data centre operators, CDNs and IXPs have adequate clarity on how such compliances will affect their existing operations and hardware equipment – as well as analyze the costs that such regulation will pass on to new entrants.

Ques 50) Stakeholders may also provide comments with detailed justifications on other relevant issues, if any.

Answer-