

1.Introduction:

1.1.Acronym 5G occurs '32' times in CP.

1.2.Acronym NDCP occurs '3' times in CP.

1.3.Digital Economy¹ is defined as "The Digital Economy incorporates all economic activity reliant on, or significantly enhanced by the use of digital inputs, including digital technologies, digital infrastructure, digital services, and data. It refers to all producers and consumers, including Government, that are utilizing these digital inputs in their economic activities".

1.4.Digital communication infrastructure and services include²:

Data Centres – used for edge computing, hosting of content, and delivering cloud-based services

Content Delivery Networks – used for delivering the content from the cloud to the edge of the network

Internet Exchange Points – enables networks to exchange traffic with each other in the internet infrastructure.

1.5. The draft National Data Centre Policy 2020, released by MeitY on 3rd November 2020 aims at creating a favourable climate for investments in the Data Centre Sector, both domestic investments and Foreign Direct Investments³.

1.6.'The Data Centre establishment requires tremendous investment at the preliminary stage due to costly real estate, power infrastructure, water requirement and improving wide area network connectivity. Acquiring land, obtaining permits, and ensuring an uninterrupted power supply are major requirements for establishment of Data Centres"⁴.

1.7.Establishing large Data Centres in India would require a lot of investment. Data Centre costs mainly consist of capital expenditure and operational expenditure: a. Capital Expenditures (CapEx) are one-time constructional costs, land costs, investment towards infrastructure setup required to build the Data Centre, wages for construction workers, buying and installing the equipment required for processing and storage, cooling solution, power ancillaries, etc., as part of greenfield rollout. b. Operational Expenditures (OpEx) involve recurring expenditure towards the continued operation of the Data Centre, including the cost of broadband connectivity, cost of power for equipment operation, as well as for cooling, repairs, and annual expenditures like wages for employees⁵.

1.8.Albeit "The labour cost in India is much lower than in developed countries, thereby reducing the construction cost to a considerable extent"⁶ investment for establishment of Data Centre for CapEx & OpEx will need FDI.

ISSUES FOR CONSULTATION

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.

Q.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 new Data Parks/zones? What facilities/additional incentives should be provided at these parks/zones? Do give justification.

Q.7: What should be the draft broad guidelines to be issued for Data Centre buildings, so as to facilitate specialized construction and safety approvals?

Q.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.

Q.9: Till India-specific standards are announced, what standards should be followed as an interim measure?

Q.10: Should there be a standard-based certification framework for the Data Centres? If yes, what body should be entrusted with the task?

Q.11: Should incentives to Data Centres be linked to the certification framework?

Q.12: Are there any specific aspects of the disaster recovery standard in respect of Data Centres that needs to be addressed? If so, then provide complete details with justification.

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.

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.

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?

Q.17: Is the extant situation of power supply sufficient to meet the present and futuristic requirements for Data Centres in India? What are the major challenges faced by Data Centre Industry in establishment of Data Centres 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 establishing Data Centres in the country? What incentivization policy measures can be offered to meet electricity requirements for Data Centres?

Q.18: Should certification for green Data Centres be introduced in India? What should be the requirement, and which body may look after the work of deciding norms and issuing certificates?

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

Q.20: What supportive mechanisms can be provided to Data Centre backup power generators?

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

161 Q.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?

Q.23: Is non-uniformity in state policies affecting the pan-India growth and promotion 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 Centres across India? What institutional

mechanisms can be put in place to ensure smooth coordination between Centre and States for facilitating DC business? Do support your answers with detailed justification.

Q.24: What practical issues merit consideration under Centre-State coordination to implement measures for pan-India single-window clearance for Data Centres?

Q.25: Is there a need for Data Centre Infrastructure Management System (DCIM) for Data Centres in India? What policy measures can be put in place to incentivize Data Centre players to adopt the futuristic technologies? Elaborate with justification.

Q.26: What institutional mechanism needs to be put in place to ensure digitization of hard document within a defined time frame?

Q.27: Would there be any security/privacy issues associated with data monetization? What further measures can be taken to boost data monetization in the country?

Q.28: What long term policy measures are required to facilitate growth of CDN industry in India?

Q.29: 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?

Q.30: 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.

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

Q.32: What are the challenges in terms of cost for growth of CDN? What are the suggestions for offsetting such costs to CDN providers?

Q.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 service providers, Data Centre operators, and Interconnect Exchange providers expansion in various Tier-2 cities?

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

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?

Q.36: How can TSPs/ISPs be incentivized to provide CDN services? Please elucidate your views.

Q.37: 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.

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

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

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

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

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

Q.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?

Q.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?

Q.45: Is the high cost of AS number allocation an impediment for small ISPs to connect to IX? If yes, what is the suggested way out?

