

# India Viewpoint

## IS INDIA THE NEXT FRONTIER FOR THE DATA CENTER INDUSTRY?



India, one of the world's fastest growing major economies, is witnessing a rapid growth in internet penetration and telecommunication technology. The expansion of the consumer base is complimented by the government's drive to digitalise the economy, all of which is propelling the demand for data centers in the country. Considering the evolving dynamics of the sector, this document provides a brief overview of India's intrinsic strengths as a data center hub, the types of data centers operational in the country, key players in this segment, parameters for selecting a location in India and potential challenges.



**Abhinav Joshi**  
*Director, Research, India*

**Raaj Thilak Raveendran**  
*Assistant General Manager, Research, India*

**Chinmay Panda**  
*Manager, Research, India*

India holds immense potential to become a data center (DC) hub in the APAC region due to its inherent strengths. Being amongst the fastest growing major economies of the world, the country also has a rapidly expanding consumer base. This is further accentuated by the presence of a young and skilled workforce. Increasing domestic and international demand from corporates belonging to sectors such as banking, financial services, telecommunications, technology, amongst others, along with infrastructure development, has given further impetus to growth in this sector. With growing reliance on internet services and advanced technologies for data management, there has been a surge in demand for high-quality DCs. As a result, the DC market in India is expected to double its size in 2018 from about USD 2.2 billion in 2016<sup>1</sup>. Moreover, the country is also expected to become the second largest DC market in Asia-Pacific by 2020<sup>2</sup>. It is already the second largest DC infrastructure market and the second-fastest growing DC market in APAC after China<sup>3</sup>.

**Understanding the Dynamics of Data Centers in India**

DCs can be broadly classified into two categories



**Captive**  
Built and managed by corporates to manage their operations



**Third-party**  
Built, managed and operated by different entities including private DC providers, government agencies and corporates; their services can be outsourced to end-users depending on specific requirements

**Types of data center models**

**Co-location Services**

Colocation allows corporates to use DCs to run their own IT systems while securely housing their own servers. Setting up such DCs requires high initial investment, and corporates are also required to carry out maintenance work on their own. On the flip side, these DCs enable corporates to customize their IT systems.

**Cloud Computing**

Cloud computing enables corporates to access a network of remote servers to store, manage and process data instead of relying on a local server or personal computer. If corporates opt for these services, the initial investment is lower and maintenance is outsourced, but users would be unable to customize the IT systems. As corporate dependence on data management rises, demand for cloud services is also expected to rise sharply. As a result, corporates are trying to outsource to cloud as much as possible. Constant investment in new servers and technology is a risk; a risk which enterprises try to mitigate by outsourcing to cloud.

Source: CBRE Research, Q2 2018

<sup>1</sup> Gartner India  
<sup>2</sup> Tech in Asia  
<sup>3</sup> Gartner India

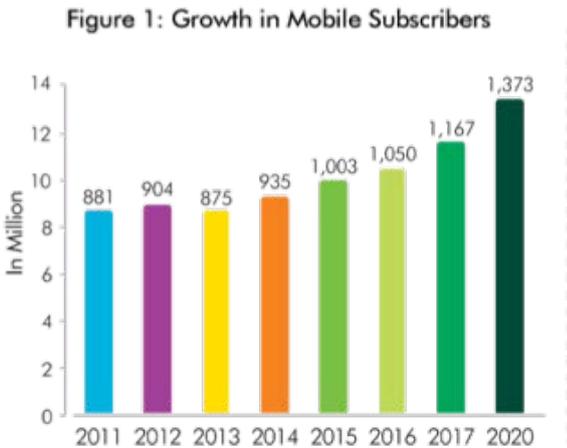
**KEY REASONS BEHIND THE COUNTRY’S GROWING POPULARITY IN THE GLOBAL DC MARKET**

**1. INCREASED MOBILE AND INTERNET PENETRATION**

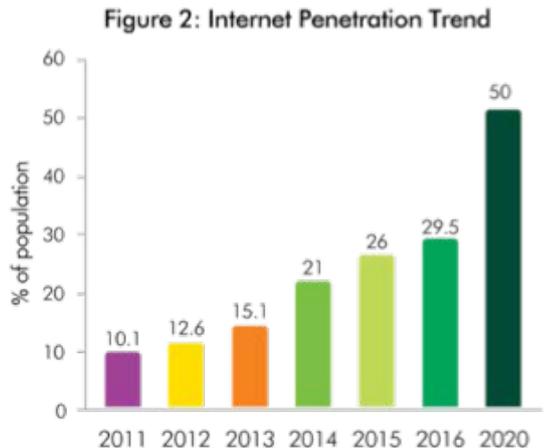
A burgeoning technology industry, growing focus from various state governments on providing telecom and internet infrastructure, and the increasing popularity of cloud computing have boosted India’s prospects as a DC hub. India’s IT-BPM sector is projected a growth of about 8% to touch USD 167 billion<sup>4</sup> in revenue during FY 2018. According to Google’s Big Data trends, in every three seconds, a new Indian user connects to the internet, translating into about 30,000 new users daily. Additionally, internet penetration in urban India is observed to be more than 60% today, while it is merely about 20% in rural India; which means that the industry is yet to tap into the opportunities offered by users in rural India<sup>5</sup>.

Over the years, India has observed a gradual increase in mobile phone usage, with India’s mobile phone subscriber base crossing one billion in 2015. Though a sizeable portion of these subscribers are currently using feature phones, a large chunk is expected to migrate to smartphones over the coming years. The number of mobile “internet” users is estimated to touch 478 million by June 2018<sup>6</sup>. With the growing consumer base of telecom companies, the storage needs of the segment are also increasing, leading to requirement of DCs for data management and storage.

The DC segment is likely to get another boost from the widening net of e-commerce in India as it increasingly needs help in managing its growing database. Sample this: in 2011, e-commerce penetration in India was merely 0.6% and it grew to 4.1% by 2016. Euromonitor International forecasts that Indian e-commerce penetration will reach 11% by 2021 – at par with developed markets such as Australia, thereby spelling more business for DC operators.



Source – Telecom Regulatory Authority of India (TRAI), GSMA



Source – Statista, BCG

<sup>4</sup>Make in India – Sector survey report, <sup>5</sup>Economic Times, <sup>6</sup>Economic Times

**2. PROACTIVE GOVERNMENT POLICIES**

The central government has introduced several policies such as the National e-Governance Plan (NeGP) and the GI Cloud initiative, which support the setting up of cloud-enabled state data centers (SDC), national data centers (NDC) and infrastructure in the form of the state-wide area network (SWAN). The government’s ‘Digital India’ campaign encourages the use of services such as cloud computing, Big Data and Internet of Things (IoT), giving a fillip to the demand for DCs. Consequently, several states have either started drawing up a DC policy (Haryana, Jharkhand and Gujarat), or have already done so (Telangana and Maharashtra).

Maharashtra and Telangana were the quickest states to tap into the growing demand for DCs by coming up with several incentive schemes for the sector. Jharkhand and Chhattisgarh are two other states which are also making efforts to leverage the growing demand for DCs, but has so far formulated policies only for the IT-ITeS segment. These states have also introduced single window clearance system to encourage investors by providing ease of doing business. However, there is lack of clarity on DC-specific incentives in its policies, unlike Maharashtra and Telangana. Listed below are a few incentives that the latter two states offer to the DC industry:

Maharashtra <sup>7</sup>	Telangana <sup>8</sup>
Stamp duty exemption on land acquisition for development of data centers	Dual power grid network to ensure uninterrupted electricity supply  Availability of renewable energy under open access system on payment of costs as applicable  Single-window solution for approvals and permits for the captive firm  Subsidized power supply and fuel prices for eligible DCs
Exemption of duty on electricity during the investment period	Subsidized land acquisition cost
Refund of Octroi/LBT Entry Tax / Escorts Tax or any other tax levied on import of capital goods and raw material for self-consumption during the investment period.	Preference given to start-up/SMEs for procurement of DC services

<sup>7</sup>Government of Maharashtra – Industries, Energy and Labor Department  
<sup>8</sup>Government of Telangana - Data Center Policy 2016

Maharashtra <sup>7</sup>	Telangana <sup>8</sup>
For new large DCs with minimum investment of INR 1,500 crore the incentives will be provided upon the investment of INR 250 crores.	25% subsidy on lease rentals of up to INR 500,000 per annum for a period of three years.
Any new investment for expansion in the existing data centers are eligible for incentives within the investment period.	State to facilitate specific R&D grants of up to 10% of the overall R&D expense or 2% of annual turnover of the company's state operations or INR 500,000, whichever is the lowest.
Incentives will last for 10 years from the date of start of operations.	Start-up DCs to be compensated 25% of internet charges up to a maximum of INR 250,000 per year during the first three years of operation.

Mumbai and Chennai, the capital cities of Maharashtra and Tamil Nadu, are two of the most important DC markets of India, especially because they are the only global cable landing stations in the country. Cable landing stations or submarine cables are vital international telecommunication links between countries across the world, making them an essential element in telecommunication services including broadband connectivity. Currently, India has about 10 submarine cable systems - four in Mumbai, three in Chennai, and one each in Cochin, Tuticorin and Digha<sup>9</sup>.

To meet the growing demand from business sectors and improve low international latency, carriers in Mumbai have constructed several subsea cable landings<sup>10</sup> near Mumbai to provide quick and reliable connections to Europe, Asia-Pacific and the Middle -East. Mumbai is followed by Chennai, which is a major entry and exit point for international subsea cables connecting the Asia-Pacific region.

Another demand driver for DCs in India will be the Smart City initiative, through which the government is focusing on shaping e-governance across the country. It is a step towards digitization as it involves development of 100 smart cities. To ensure its success, storage and analysis of massive volumes of data would be required, providing a window of opportunity to DC players.

<sup>7</sup>Government of Maharashtra – Industries, Energy and Labor Department

<sup>8</sup>Government of Telangana - Data Center Policy 2016

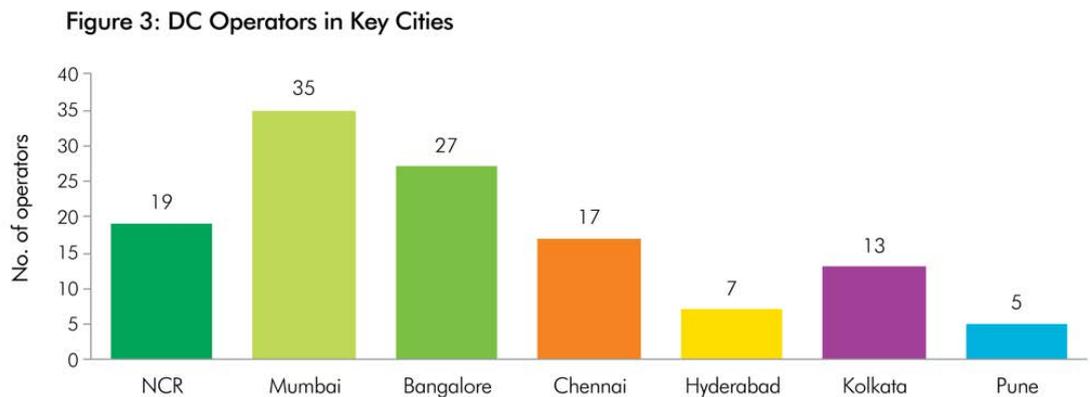
<sup>9</sup>Submarinenetworks.com

<sup>10</sup>451 Research

### 3. RE AVAILABILITY AT LOW COST

The country’s untapped DC potential leaves ample room for domestic as well as global players to enter the market. Unlike countries such as Singapore and Japan, India does not face a significant space crunch, with abundant large-sized land parcels available, especially in the peripheral locations of cities. As a result, RE costs have remained lower than other countries, thereby reducing capex for setting up DCs and leading to economies of scale. Moreover, a majority of the upcoming office supply is concentrated in these locations. Consequently, these areas have seen significant infrastructure impetus in the form of improved connectivity and better access to power and water services. Given these advantages, setting up DCs in these locations is bound to be much easier than other Asian countries.

Already, India has seen the growth of DCs across all key cities, including Mumbai, Chennai, Bangalore and Hyderabad. While all cities have strong office markets, Mumbai and Chennai in particular have attracted DC players as they offer cost arbitrage through the use of direct submarine lines/cables. The below graph enumerates the approximate number of data center operators in key cities in India:



Source: CBRE Research, Q2 2018

*\*The above graph is basis secondary research and might not represent the entire market*

### 4. WIDE DEMAND BASE

Technology and banking & financial services are the two industry sectors that have accounted for a majority share in India’s office space leasing over the past few years, indicating that the demand for DCs could rise in the coming years.

Moreover, most BFSI corporates tend to be data-sensitive and would rather face latency than opt for overseas DCs. Also, due to data sovereignty laws, most BFSI operators don’t want to locate their data centers outside India. This would give a further fillip to the sector in India. While large financial institutions and telecom companies are likely to develop captive DCs for hosting their increasing data storage needs, DC service providers are also expected to invest in enhancing their capabilities to meet the demand of small and mid-sized users.

## 5. AVAILABILITY OF SUPPORT INFRASTRUCTURE

India has numerous home-grown advisory service providers who can help international DC players adapt to the country's business landscape. The National Association of Software and Services Companies (NASSCOM) is a non-profit organization established in the late 1990s to facilitate business and trade in technology and services and encourage advancement of research in technology. In addition, the Sohrabji Godrej Green Business Center (CII Godrej GBC) offers advisory services to the industry in segments such as green buildings, energy efficiency, water management, environment management, renewable energy, green business incubation and climate change activities – which are essential factors for setting up DCs. The organization also holds special events and workshops for the DC sector.

## 6. TECHNOLOGICAL GROWTH

India is not far behind in keeping pace with global trends in technology. The ongoing technological transition and adoption of advances such as cloud services, IoT and Big Data is likely to grow in India as well as globally in the times to come, driving the demand for DCs. Below are a few statistics that can help us chart India's technological evolution over the years:

- **Cloud services:** Indian public cloud services spending is expected to grow at a CAGR of 29%, from USD 968 million in 2015 to USD 3,528 million in 2020<sup>11</sup>.
- **IoT:** The IoT market is expected to increase to USD 15 billion by 2020 from USD 6 billion in 2016, growing at a CAGR of about 22%. This is likely to boost the demand for DC services<sup>12</sup>.
- **Big Data and business analytics:** Big Data and business analytics revenue is expected to rise to USD 4 billion by 2019 from USD 2 billion in 2016, growing at a CAGR of 25%. The growth, driven primarily by IT/ITeS, will increase the demand for data storage space (data centers)<sup>13</sup>.

## INCREASING ACTIVITY BY DC PLAYERS

The growing importance of DCs in business operations can be attributed to advances in digital technology and the rising reliance on IT strategies in business delivery process. As a result, the Indian DC market is attracting investors, considering that it offers many untapped opportunities. Several companies have either amped up their existing DC portfolio or have made plans to do so. Below are a few instances of existing and planned investments:

<sup>11, 12, 13</sup>Global Summit – Gujarat 2017

Company	Existing Investment
American tech major	Launched three DCs in Mumbai, Pune and Chennai
American tech major	Launched a cloud DC in Chennai
Ctrls	Launched three DCs in Mumbai, Hyderabad and Delhi

Company	Planned Investment
Infibeam	Plans to set up a DC in Gujarat
Chinese e-commerce major	Plans to develop local DCs across the country
A UK based telecom corporate	Plans to invest in various locations of the country
Netmagic Solutions	Plans to invest about INR 2,000 crore to set up two DCs in Mumbai and Bangalore
Ricoh	Plans to invest about INR 300 crore to set up DCs in Gujarat
Cyfuture	Plans to invest about INR 50 crore to develop a DC in Noida

Source: CBRE Research, Q2 2018

Following is a list of some of the key DC service providers currently operating in India:

Operator	Government /Private	Global/Do mestic	Type	Services	City
Sify	Private	Domestic	Third Party	Colocation	NCR, Bangalore, Mumbai, Chennai, Hyderabad
Tata Communic ation & STT	Private	Domestic	Third Party	Colocation	NCR, Mumbai, Bangalore, Chennai, Hyderabad, Kolkata, Pune
Reliance	Private	Domestic	Third Party	Colocation	Mumbai, Bangalore, Chennai, Hyderabad

Operator	Government /Private	Global/Domestic	Type	Services	City
NTT Communication	Private	Global	Third Party	Colocation	NCR, Mumbai, Bangalore, Chennai
NDC	Government	Domestic	Captive	Colocation	NCR, Hyderabad, Pune
Netmagic Solution	Private	Domestic	Third Party	Colocation	NCR, Mumbai, Bangalore, Chennai
NextGen HDDC	Private	Global	Third Party	Colocation	Mumbai, Bangalore, Ahmedabad, Faridabad, Ghaziabad, Jaipur, Ludhiana
Net4Data Center	Private	Domestic	Third Party	Colocation	NCR, Mumbai, Bangalore, Chennai, Hyderabad, Pune, Chandigarh
Wipro	Private	Domestic	Captive	Colocation	NCR

Source: CBRE Research, Q2 2018

**WHAT DO YOU NEED TO SET UP A DC IN INDIA?**

DC developers looking to set up a facility in the country would be required to invest on an average INR 24,000-25,000 per sq. ft. for constructing a Tier IV center\*. For a Tier III\*\* center, the cost would be INR 16,000-18,000 per sq. ft. These costs exclude server and IT costs. In terms of IT power, the construction cost for an average DC in India has been calculated at USD 6-8 per watt<sup>14</sup>.

Ensuring Power Usage Effectiveness (PUE) also is an important factor for calculating overall operations cost for a DC and identifying opportunities to increase efficiency. High power consumption costs can wreck budgets of both operators and consumers. Therefore, scoring a high PUE rating is important to showcase an efficient data center as it indicates lower operating costs.

To meet corporate digital needs, a DC should meet the following requirements in India:

Parameter	Requirement
Size	At least 20,000 – 40,000 sq. ft. for captive data centers; At least 100,000 – 200,000 sq. ft. for third-party data centers
Performance Infrastructure	Provision of racks, servers, floor loads etc.
Power Capacity/Back-up	At least 8 kVA per rack for computers; all systems should have at least n+1 redundancy
Network Infrastructure	Carrier neutrality; provision for multiple networks and connectivity issues; 24x7 tech support
Disaster Mitigation	Provisions to address earthquakes, floods and other natural disasters
Scalability	Ability to downsize or expand operations
Efficiency	Focus on environmental monitoring including cooling and humidity management systems
Security	Restricted access, alarm systems and physical and software security

Source: CBRE Research, Q2 2018

\*Tier IV DC – Tier III DC + storage facility, chillers, HVAC and fault tolerant  
 \*\*Tier III DC – Comprises of redundant capacity, multiple uplink with dual powered facility  
 Redundancy: Inclusion of additional components in case of failure of other component  
<sup>14</sup>CBRE Research

## PARAMETERS TO EVALUATE WHILE SELECTING A LOCATION FOR DC IN INDIA

As companies use DC facilities to store mission-critical data, location is an important consideration during the decision-making process for such a facility. A developer should consider the following locational attributes before making a decision:

- 1. POWER AND NETWORK ACCESSIBILITY:** The availability of power and network infrastructure to run the facility is the most critical requirement. Companies that run large data center operations, such as internet service providers, telecommunications providers and financial institutions, are firm about receiving uninterrupted power supply and 24x7 network accessibility. In fact, for most firms, especially technology firms, power usage effectiveness is more critical than being cost effective/cost efficient.
- 2. CONSTRUCTION COSTS:** High construction costs are an inevitable factor for deploying and maintaining modern, energy-efficient DC infrastructure. Therefore, construction cost differentiation across geographies play an important role in the site selection process.
- 3. RISK OF NATURAL DISASTERS:** Operational disruption in DCs is a key risk for operatives. Hence, assessment in terms of environment, weather pattern and other natural phenomenon is a part of the location selection process. Moreover, disaster mitigation provisions are an important parameter for setting up DCs.
- 4. AVOIDING FLIGHT ZONES:** While land parcels around airports might be cheaper, building a DC in proximity to the airport or even in-flight paths is fraught with risks, considering the concern around accidents. Any incident like this would directly affect the operations of a DC and negatively impact the daily operations of the dependent corporates.
- 5. COMMUNICATION AND ACCESSIBILITY:** Although proximity to the business point does not play a critical role in setting up DCs, operatives tend to set up facilities in tier II and III cities to save costs. However, easy accessibility to the site is essential for operational purposes to manage the supply of equipment and movement of crew as well as to help mitigate emergencies.
- 6. ACCESS TO WATER:** DCs require a reliable cooling system to prevent equipment from overheating. The massive power they use usually generates heat, making efficient cooling system a key building requirement. While multiple cooling processes are available for DCs depending on their size, computer capacity, regional energy costs, data load and density, most prefer to use water-cooled chiller plants, air-cooled chiller plant, direct evaporation cooling and adiabatic cooling. All these systems require access to water, making it an important factor in making location decisions.

**7. AVOIDING INDUSTRIAL ZONES AND POLLUTED AREAS:** Data centers require massive investments from all players – developers as well as occupiers. Therefore, their maintenance is as important as their security and connectivity. Pollution from industries can amplify maintenance costs if a DC is situated in such an area. It is often observed that dust hampers the speed and efficiency of DC equipment. As a result, they need to be replaced at a higher frequency than usual, which further increases the cost of DC operations.

### WHAT ARE SOME OF THE CHALLENGES AHEAD FOR INDIA?

Despite having immense potential to become a DC hub in the APAC region, India still faces some critical challenges:

- 1. GOVERNMENT REGULATIONS:** Several states in India are yet to formulate their policies for this segment, thereby reducing the overall attractiveness of the Indian market. Moreover, national laws on telecom, licensing and data privacy are not as liberal or investor friendly as in other countries such as Singapore and Japan – a deterrent for global players looking to invest in the country. Additionally, issues such as cumbersome approvals and prolonged environmental clearances also need to be addressed.
- 2. INFRASTRUCTURE:** Procurement of basic infrastructure facilities such as cost-effective power services (through open power access), dual-use equipment (such as optical switches) and dark fibers, along with the most critical aspect - land acquisition, continues to face several bottlenecks, which include requirement of multiple clearances and several procurement restrictions. This escalates costs and therefore deters players from entering this segment.
- 3. LOCATION:** While each Indian city offers its own set of advantages, the viability of building a DC should be carefully tested. High seismic zoning, probability of floods, and extreme heat conditions could be a huge deterrent for players looking to set up a center in certain cities.
- 4. COST:** Although the country has the potential to offer economies of scale to DC operators vis-à-vis other APAC countries, the lack of clear legislation reduces cost effectiveness of basic elements such as power supply, racks, cables, telecom connectivity, etc.

## CBRE VIEW

The Indian DC industry will continue to evolve as demand from domestic and international markets grows. Currently, most of the demand is being generated by businesses relying on internet communication and data storage. Soon enough, the growing adoption of cloud computing, IoT and Big Data is bound to make the demand for DCs spread across different types of businesses. As of now, third-party DCs are in an expansion mode on the back of growing demand for better connectivity and data storage.

With a growing consumer base, demand for data storage and confidentiality is also increasing significantly. For instance, for the fast growing BFSI sector, we expect captive centers to gain prominence as most BFSI companies require strict data confidentiality and complete management control of their operations.

The trend of outsourcing data storage to cloud computing is fast becoming a norm as regular investment in new servers and technology can get expensive, especially large businesses groups. However, we anticipate that the cost of cloud computing would increase in the coming years with growing demand and market maturity, even though currently its cost effectiveness is the primary reason for its high demand. Pricing for colocation services is also expected to sharpen as a rise in demand is expected from firms that are keen on customizable IT systems.

Hyperscale DCs would be the next big demand driver in the industry, considering that performance computing, automation and standardization are becoming industry buzzwords. These centers have massive computing resources with virtually unlimited scalability for hosting services but do not require any additional physical space, cooling or electrical power. While these DCs have yet to make their presence felt in the country, their arrival in the Indian market is unlikely to get delayed as various tech giants and DC service providers are already looking to set up hyperscale data centers here.

The outlook for India's DC market therefore looks positive as the country offers significant advantages in terms of availability of land and talent pool vis-à-vis other APAC countries, along with a largely untapped, huge local market. Moreover, initiatives and policy reforms launched by the government have generated optimism and excitement among overseas investors. We expect investments to rise exponentially in this sector, with several local start-ups gaining prominence as they leverage the government's recent slew of incentives. Investments from international players is also going to rise, with a surge in land transaction activity for DC's expected.

Amongst the major states, Maharashtra and Telangana will continue to be attractive DC markets, but other states such as Andhra Pradesh, Gujarat and Jharkhand are also expected to step up efforts in this segment. Already, Gujarat and Jharkhand have developed an incentive structure for DC operators and more states are expected to come up with such schemes in the near future.

On another note, corporates cannot make real estate portfolio decisions in isolation, technology strategies and expansion plans must form a critical component of such decisions. The real estate and IT strategies of corporates must be in complete alignment with each other. When the CRE teams evaluate their decision to relocate, consolidate or expand into a new facility, they must consider the requirements for tech infrastructure and DCs as well. Consequently, CRE teams must be empowered with information concerning not just real estate leases but DC leases as well. The more aligned technology and CRE strategies of corporates are, the more robust and forward looking their business plans will be.

**CBRE Global Research**

This report was prepared by CBRE India Research Team, which forms part of CBRE Global Research – a network of preeminent researchers who collaborate to provide real estate market research and econometric forecasting to real estate investors and occupiers around the globe.

For more information regarding this *ViewPoint*, please contact:

**RESEARCH****Abhinav Joshi**

*Head of Research, India*

19th Floor, DLF Square, M Block, Jacaranda

Marg, DLF City Phase II, Gurgaon 122 022

+91 124 465 9700

abhinav.joshi@cbre.co.in

**Ram Chandnani**

*Managing Director – Advisory and Transaction Services, India*

Ground Floor, Hulkul Brigade Centre, No. 82 Lavelle Road, Bangalore 560 001

+91 80 407 40000

ram.chandnani@cbre.co.in

**Raaj Thilak Raveendran**

*Assistant General Manager, India Research*

Module 4A, A Block, 10th Floor SP Infocity, No 40, MGR Salai, Kandanchavadi, Perungudi, Chennai, Tamil Nadu 600096

+91 44 6680 7000

Raajthilak.raveendran@cbre.co.in

**Jasmine Singh**

*Executive Director – Advisory and Transaction Services, India*

19th Floor, DLF Square, M Block, Jacaranda Marg, DLF City Phase II, Gurgaon 122 022

+91 124 465 9700

Jasmine.singh@cbre.co.in

**Chinmay Panda**

*Manager, India Research*

PS Pace, Unit 702, 7th Floor

1/1, Mahendra Roy Lane, Kolkata 700046

+91 33 40190 0200

chinmay.panda@cbre.co.in

**Tom Duncan**

*Executive Director – Advisory and Transactions Services, Data Center, APAC*

6, Battery Road

#32-01, Singapore 049909

+65 6328 1352

Tom.duncan@cbre.com.sg