



ASIA PACIFIC

DATA
CENTRE
TRENDS
H1 2021

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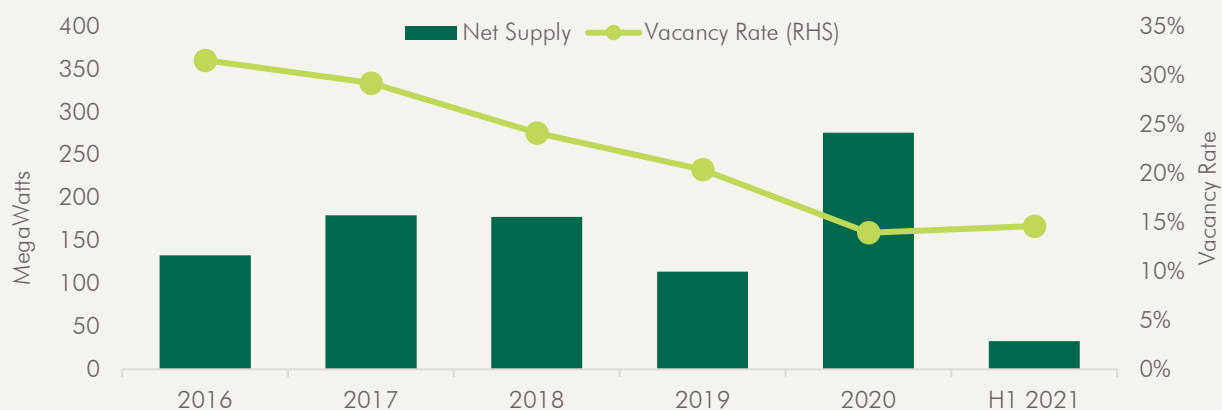


SUPPLY AND VACANCY

A total of 95 MW-IT of data centre capacity was launched in Asia Pacific tier I markets (Tokyo, Sydney, Singapore and Hong Kong SAR) in H1 2021. Major new openings included phase 1 of AirTrunk’s SYD2, the company’s largest project in Australia. Elsewhere, Japan saw the phase 1 opening of a 54 MW data centre by Equinix in Tokyo, part of its US\$3 billion global expansion plan with GIC.

Overall vacancy in tier I Asia Pacific data centre markets edged up from 13.9% in December 2020 to 14.6% in June 2021, mainly due to higher vacancy in Sydney. However, data centre operators in Asia Pacific remain comfortable with a vacancy rate of around 20% as they require a large buffer for expansion. Operators only plan new developments when their existing assets are 60-70% occupied. A facility with 10% or below of unsold capacity tends to be taken up by existing tenants rather than attracting new users.

FIGURE 4: NET SUPPLY AND VACANCY OF ASIA PACIFIC TIER I CARRIER NEUTRAL COLOCATION DATA CENTRE MARKETS



Source: CBRE Asia Pacific Data Centre Solutions, August 2021.

Of the four major Asia Pacific data centre markets, Tokyo has the largest pipeline over the next three years. Recently announced projects include a 97 MW data centre by Princeton Digital Group in Saitama City, Saitama prefecture to the north of Tokyo, its first in Japan. The facility will be completed in two phases by 2024 and 2026. Elsewhere, AirTrunk has submitted a development application for SYD3 in Sydney, adding to its current capacity of over 370 MW in Australia.

TABLE 1: SELECTED NEW COLOCATION DATA CENTRE SUPPLY IN H2 2021 - 2022

Location	Operator	Project Name	Capacity	Expected Launch
Tokyo	AirTrunk	TOK1	60 MW (Phase 1)	2021
Singapore	STT GDC	Loyang	40 MW	2021
Hong Kong SAR	Digital Realty	HKG11	24 MW	2021
Tokyo	AirTrunk	TOK1	240 MW (Phase 2+)	2022
Tokyo	MC Digital Realty	NRT 10	38 MW	2022
Tokyo	Equinix	TY12x (Phase 2)	10 MW	2022
Sydney	NEXTDC	S3	80 MW	2022
Sydney	DCI Data Centers	SYD02	36 MW	2022
Hong Kong SAR	SUNeVision	TWTL 428	20 MW	2022

Source: CBRE Asia Pacific Data Centre Solutions, CBRE Research, August 2021.

DEMAND

Total colocation data centre net absorption in Asia Pacific tier I markets (Tokyo, Sydney, Singapore and Hong Kong SAR) slowed to 70 MW in H1 2021 from 123 MW in H2 2020. This was largely because the majority of this year's new data centre supply is not due to come on stream until the second half of this year.

Half of net absorption registered in H1 2021 originated from U.S. and mainland Chinese hyperscale cloud providers, which took up a large volume of MWs across multiple markets. While there are still a few openings in tier I markets, the bulk of service expansion is occurring in emerging Southeast Asia. Indonesia is garnering more attention in this region due to its fast-growing digital economy and relative ease of entry.

U.S. hyperscale cloud providers added to their presence in mainland China in the first six months of the year. AWS (China) established its third availability zone in Beijing in June 2021, while Microsoft Azure is reportedly planning to launch four more data centres in the country by 2022. Hong Kong SAR remains a hotspot for mainland Chinese hyperscale cloud providers, with Tencent opening its third availability zone in this market in H1 2021, and Huawei reportedly planning a new facility.

Data security and sovereignty is a key demand driver of data storage demand in Asia Pacific at present. To comply with mainland China's cybersecurity laws, Tesla established a data centre in Shanghai in H1 2021 to store all locally generated data. Apple opened a data centre in Guian earlier this year, with a facility in Inner Mongolia to follow.

Security issues are not limited to data held by corporates. In Australia, the government has tightened data storage requirements for its own data due to national security concerns. Under the Hosting Certification Framework introduced in March 2021, only three companies are currently certified to host Australian government data.





TIER I MARKETS

TOKYO

Vacancy edged down in H1 2021 amid the release of pent-up demand from cloud providers and corporates. While the ample development pipeline is expected to result in slightly higher vacancy, the overall demand-supply balance will remain healthy. Although data centre development is largely concentrated in Tokyo and Osaka, the government hopes to stimulate data centre investment in other cities by offering tax breaks and other financial incentives.

TABLE 2: TOKYO KEY INDICATORS



Total Capacity	2021 – 2024 Pipeline
516 MW	526 MW
2021 Outlook	
Vacancy Rate	Rents
	

Remarks: Rental outlook refers to the average colocation rate. Source: CBRE Asia Pacific Data Centre Solutions, CBRE Research, August 2021.

SINGAPORE

Availability tightened further in the first six months of the year, with vacancy falling below 1%. End-users rushed to commit to limited capacity, with pandemic-led demand for cloud storage serving as an additional tailwind. The majority of the development pipeline until 2023 has already been pre-committed amid keen competition for IT capacity. The market continues to await news regarding the data centre development moratorium and whether it will be extended or revised when it expires at year-end.

TABLE 3: SINGAPORE KEY INDICATORS



Total Capacity	2021 – 2024 Pipeline
478 MW	232 MW
2021 Outlook	
Vacancy Rate	Rents
	

Remarks: Rental outlook refers to the average colocation rate. Source: CBRE Asia Pacific Data Centre Solutions, CBRE Research, August 2021.

SYDNEY

Ample new completions and a large supply pipeline stimulated flight-to-quality as well as cost saving relocations in H1 2021. The period saw several older data centres forced to lower rents to retain tenants. Supply pressure will ensure pricing continues to trend downward. The New South Wales government's recent move to relax planning approvals for data centre development should stimulate further growth in new supply.

TABLE 4: SYDNEY KEY INDICATORS



Total Capacity	2021 – 2024 Pipeline
488 MW	456 MW
2021 Outlook	
Vacancy Rate	Rents
	

Remarks: Rental outlook refers to the average colocation rate. Source: CBRE Asia Pacific Data Centre Solutions, CBRE Research, August 2021.

HONG KONG SAR

Sociopolitical concerns continued to weigh on data centre take-up in H1 2021. While foreign corporates and cloud providers retain a wait-and-see approach, Chinese hyperscale cloud providers remained in expansion mode. Despite relatively slower absorption, major data centre operators and investors are upbeat about the prospects for longer term demand. Notable transactions in H1 2021 included ESR's purchase of an industrial building in Kwai Chung for conversion into a 40 MW data centre, which would be its first in the territory.

TABLE 5: HKSAR KEY INDICATORS

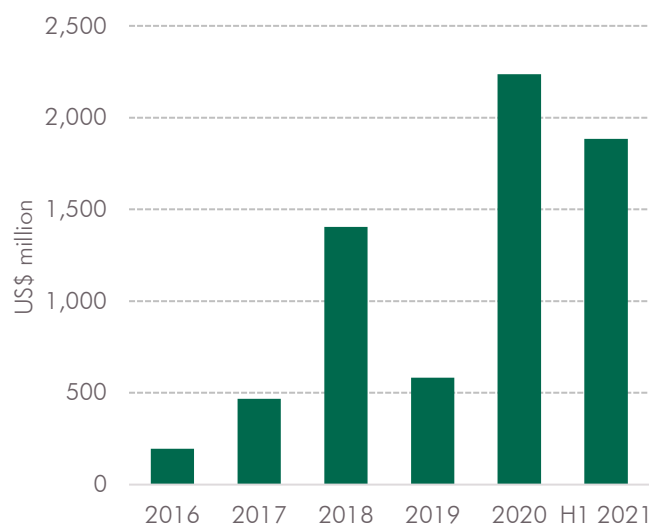
Total Capacity	2021 – 2024 Pipeline
394 MW	320 MW
2021 Outlook	
Vacancy Rate	Rents
	

Remarks: Rental outlook refers to the average colocation rate. Source: CBRE Asia Pacific Data Centre Solutions, CBRE Research, August 2021.

INVESTMENT

Investors continued to display a strong appetite for data centres in H1 2021. Asia Pacific direct data centre investment turnover reached US\$1.8 billion in the first six months of the year, equivalent to 80% of full-year 2020 turnover. Mainland China accounted for the highest proportion of investment turnover thanks to the completion of several major deals. These included the acquisition of a 50% stake in Songjiang Internet Data Centre in Shanghai by GLP for US\$942 million, and GDS's purchase of a data centre in Beijing from CITIC Group for US\$587 million. CBRE expects data centre investment volume to reach a new high this year, with several major transactions expected to be finalised in H2 2021. These include Capitaland's and Keppel DC REIT's proposed acquisitions of data centre campuses in Shanghai and Jiangmen, respectively.

FIGURE 5: ASIA PACIFIC DIRECT DATA CENTRE INVESTMENT VOLUME



Note: Transaction of development site are excluded.
Source: RCA, CBRE Research, August 2021

Despite H1 2021's high transaction volume, limited asset availability continues to impede direct data centre investment in the region. To access the sector, investors are advised to target disposals from telecommunications companies, which are among the major owners of data centres in the region and are increasingly looking to monetise their assets. Several telecommunications companies completed sale leaseback transactions in H1 2021, with others such as Singtel and Vodafone India reportedly keen to follow suit. While greenfield development is another route for investors to access the sector, this approach continues to be dominated by data centre operators building their portfolios. However, general investors can still partner with operators to jointly develop data centres or provide project financing.

TABLE 6: SELECTED SALE AND LEASEBACK TRANSACTIONS BY TELECOMS COMPANIES IN H1 2021

Market	Details	Price (US\$ million)	Buyer	Seller	Lease term
Tokyo, Japan	Two data centres	Not Disclosed	Digital Edge	ARTERIA Networks	N/A
Seoul and Busan, Korea	A data centre in Gangnam, Seoul and a cable landing station facility in Centum City, Busan	Not Disclosed	Digital Edge	Sejong Telecom	N/A
Jiangmen, Mainland China	Guangdong Data Centre	98	Keppel DC REIT	Neo Telemedia	15 years

Source: CBRE Research, August 2021.



INVESTMENT (CONT'D)

Indirect investment channels into the data centre sector include forming partnerships with experienced data centre operators, several examples of which were observed in H1 2021. Japan saw Mitsui form joint ventures with CPPIB and Fidelity, respectively, to build hyperscale data centres. Of the 32 hyperscale data centres set to be developed as part of a US\$3.9 billion joint venture between GIC and Equinix, all six confirmed projects in Asia Pacific are in Tokyo and Osaka.

Australia also offers opportunities for joint venture deals, with investors advised to partner with smaller local data centre operators as larger groups prefer to build their own facilities. In tier II data centre markets, investors are displaying a preference for Korea, India and Indonesia.

Equity investment is another potential entry route for data centre operators and investors. In Indonesia, following the relaxation of foreign ownership restrictions in March 2021, Digital Edge acquired a majority stake in Indonet. Globally, the total value of closed and pending data centre M&A deals reached US\$23 billion in H1 2021, more than two-thirds of the full-year 2020 figure¹. The biggest deal was Blackstone's acquisition of U.S.-listed REIT QTS Realty Trust for US\$10 billion. In Asia Pacific, major transactions included PCCW's disposal of its data centre business to U.S. data centre REIT DigitalBridge for US\$750 million in July 2021.

Converting aged industrial assets to data centres is a viable strategy in Greater China. Due to the limited supply of land for data centre development in Hong Kong SAR, investors and operators in this market are converting industrial buildings to data centre use. In H1 2021, SUNeVision converted a six-storey warehouse owned by its parent company to a 10 MW data centre, while ESR acquired a cold-storage facility for conversion into a 40 MW data centre. Similar opportunities are available in mainland China, especially in Shanghai, where authorities recently released new policies to encourage data centre conversions of industrial buildings in suburban industrial parks or power plants with readily available power².

¹ With Blackstone's QTS Acquisition, Data Center M&A Hits \$23B, CRN, 2021. [\[Link\]](#)

² 关于全面推进上海城市数字化转型的意见, 上海市推进新型基础设施建设行动方案 (2020 - 2022), Shanghai Government, 2021.

MAINLAND CHINA OVERVIEW

As of the end of 2019, there were around 74,000 data centres in mainland China³, accounting for 23% of global stock. While the market is dominated by local telecommunications companies, which account for more than 60% of market share, most of them are not carrier-neutral⁴.

As foreign direct investment in Internet Data Centres (IDC) is capped at 50%, the carrier-neutral colocation data centre market is dominated by local players. This means foreign operators, both carrier neutral colocation and hyperscale cloud providers, must partner with domestic companies. Examples include Equinix's operation of four data centres in Shanghai under a strategic partnership with Datang Gaohong, and Microsoft Azure's partnership with 21Vianet for its mainland China operations.

Data centre development in mainland China is concentrated in tier I markets, which possess an estimated total capacity of over 1,400 MW. Given tight land supply and power quota within core areas, data centres in tier I cities are often located in satellite cities in nearby provinces.

Greater Beijing, which includes Langfang, Zhangbei and Huailai in Hebei province, is the biggest market, both in terms of hyperscale cloud availability and carrier neutral colocation. Greater Shanghai, which includes Kunshan, Changshu and Nantong in Jiangsu province, is the second largest location owing to strong demand from operators looking to cater to strong corporate and financial sector demand. In the Greater Bay Area, Shenzhen and Guangzhou are the key hubs, while Qingyuan and Huizhou are secondary locations for data centre development.

The rapid pace of data centre development in mainland China has led to a supply imbalance between the east and the west of the country, with around 60% of national data centre capacity located on the east coast. Huge demand for electricity has prompted local authorities in tier I markets to introduce new regulations to guide development. In addition, the central government unveiled a new national data centre strategy⁵ in H1 2021 which aims to redirect the focus of development. Key priorities include:

SHIFT IN DEVELOPMENT FOCUS

- The growth in total data centre capacity between 2021 – 2023 is targeted to be kept at around 20% per annum, compared to 36.4% between 2016-2019. The occupancy/utilisation rate is aimed to improve from 53.2% at end-2019 to 60% in 2023.
- Data centre development should be redirected from the eastern coast to inner areas. By 2035, data centre capacity on the eastern coast must account for 50% of the national total. The ratio in the western and inner areas, such as Inner Mongolia, Ningxia, Guizhou and Gansu, should increase from 10% to 25%.

ENCOURAGE CONSOLIDATION AND UPGRADING OF OLD DATA CENTRES IN INNER CITY AREAS

- Existing data centres in inner city areas are encouraged to be upgraded and repositioned to support edge computing, and to cater to industries that require low latency, such as high-frequency trading. For example, self-use or storage-driven data centres in Beijing's Dongcheng and Xicheng districts will be gradually closed, with capacity redirected to edge computing use.

³ CCID Consulting, 21jingji.com, 2020.

⁴ Ministry of Industry and Information Technology, People's Republic of China

⁵ 全国一体化大数据中心协同创新体系算力枢纽实施方案 and 新型数据中心发展三年行动计划



MAINLAND CHINA OVERVIEW (CONT'D)

LARGE DATA CENTRE DEVELOPMENT TO SHIFT TO SATELLITE CITIES

- Large data centre development earmarked for tier I cities is set to be redirected to satellite cities and nearby provinces. By 2035, 60% of data centre capacity for mid-high latency computing will be relocated outside the Greater Bay area to other areas of Guangdong province.

DEVELOPING GREENER DATA CENTRES

- Ministry of Industry and Information Technology data show that large data centres (i.e. those with 3,000 to 10,000 racks) in mainland China have a Power Usage Effectiveness (PUE)⁶ of 1.55. Starting this year, new builds are required to have a PUE of below 1.35, with the ratio to be further lowered to 1.3 by 2023. In addition, 50% of data centres' energy usage should come from renewable energy sources such as on-site solar panels or purchases of renewable electricity.

ENCOURAGE DATA CENTRE INVESTMENT

- Apart from encouraging the flow of private capital into data centre development, authorities will permit quality projects to be listed as REITs. This follows the launch of mainland China's public REIT market earlier this year.

⁶ Power Usage Effectiveness (PUE) describes how efficiently a computer data centre uses energy. It is the ratio of total amount of energy used by a data centre to the energy delivered to computing equipment. The lower the ratio means the more efficient the data centre is.

DATA CENTRES AND ESG

Data centres are an electricity-intensive asset class, reportedly accounting for 7% of Singapore's total power consumption in 2020⁷. Electricity costs typically represent around 40 to 50% of a retail data centre's operating expenses⁸. Energy efficiency has therefore always been a priority for data centre operators due to its impact on operating costs and profits. More recently, more stringent environmental requirements among regulators, occupiers and investors have compelled data centre operators to operate more sustainably.

Mainland China was among the first Asia Pacific markets to introduce and tighten requirements around PUE for future development projects. In Singapore, the government has partnered with Facebook to conduct studies into more efficient data centre cooling systems, and reportedly plans to introduce new controls on energy consumption if the moratorium on new data centre development is lifted.

CBRE expects ESG compliance to play an increasingly important role in helping data centre operators attract and retain quality tenants. Large corporates including Microsoft and Apple have already committed to reach net zero carbon emissions in their real estate portfolios, with more companies expected to follow suit.

Investors are demonstrating a stronger emphasis on ESG compliance across all regions. A recent CBRE study found that more than half of investors have already integrated ESG criteria into prospective real estate investments⁹. While data centres may not be investors' immediate focus, CBRE expects green standards to emerge as a key investment criterion.



Data centre operators' ESG priorities include:

1. RENEWABLE ENERGY

Purchasing renewable energy from clean power providers or renewable energy certificates is a widely adopted practice among major data centre operators. More than 90% energy consumed by Equinix's data centres in the Americas and Europe comes from renewable sources, with the ratio in Asia Pacific slightly lower at 74%¹⁰.

While many data centre operators are generating energy on-site via solar panels, several providers have chosen to create their own green energy sources. In 2020, Chindata signed agreements with Shanxi and Hebei provinces for a total of 1,300 MW of wind and solar power development projects, with a 150 MW photovoltaic power project having already commenced construction.

⁷ MCI's response to PQ on data on current and expected 2021 total carbon emissions by data centres in Singapore and efforts to reduce emissions for data centres, Ministry of Communications and Information, July 2021 [\[Link\]](#)

⁸ CBRE Asia Pacific Data Centre Solutions, August 2021.

⁹ CBRE Global Investor Intention Survey, CBRE Research, April 2021.

¹⁰ Equinix 2020 Corporate Sustainability Report.



DATA CENTRES AND ESG (CONT'D)

2. GREEN BUILDINGS

Constructing data centres with a lower PUE and/or green certification is now standard practice in the data centre industry. Of the 83 data centres worldwide with LEED v4 certification in building design and construction, 33 are in Asia Pacific¹¹. Other initiatives in this region include a plan by JD.com to connect its new data centres in mainland China to district heating schemes to reuse heat energy¹².

Apart from building design, some data centre operators have incorporated sustainability metrics into their tenancy agreements. For example, in 2017, Digital Realty committed to expanding its adoption of green leases in new customer contracts. According to the company's 2020 ESG report, 72% of net-new eligible contracts have since adopted green lease provisions.

3. ENVIRONMENTAL IMPACT

Data centre operators are seeking to improve the transparency of their sustainability practices to support clients' ESG reporting. In January 2020, Microsoft Azure introduced a calculator to help enterprise clients analyse their cloud service-related emissions.

¹¹ U.S. Green Building Council, August 2021.

¹² JD.com 2020 Environmental, Social and Governance Report.

DEFINITIONS

KEY TERMS

OVERVIEW

COLOCATION DATA CENTRE



Specialist, standalone data centre facility typically operated by a third-party provider for multiple occupiers. Companies share space and power infrastructure for storing and running their IT equipment, akin to a multi tenant office building or apartment complex.

HYPERSCALE COLOCATION



Denotes large power requirements (typically multi-megawatts, or at least more than 2MW), and end user is specifically a cloud provider or large tech company with requirements for scalable power, storage, and cooling.

WHOLESALE COLOCATION



Typically denotes larger power requirements (>500 kW) by enterprises, between retail and hyperscale deployment sizes.

RETAIL COLOCATION



Typically denotes smaller power requirements (can range from 10kW to 300 kW+) taking up fitted space, with less customization privileges.

“CARRIER” OR “NEUTRAL” COLOCATION DATA CENTRES



CBRE exclusively tracks third-party carrier neutral colocation data centres across Asia Pacific, except in markets where carriers predominate (e.g. Korea, Taiwan).

UPCOMING SUPPLY



Data centre facilities that have been planned, qualified and authorized by the relevant local / municipal authorities and are currently undergoing pre-development / development of the powered shell.

CAPACITY



The total quantum of useable, sellable IT capacity in a data centre facility (or market), inclusive of sold and unsold capacity. The unsold capacity includes both fitted and shell & core space.

Fitted: The amount of power available immediately in fully fitted data centre space.

Shell: The amount of power available in a data centre space that is pre-qualified for power and telecom access and amenable to data center use.

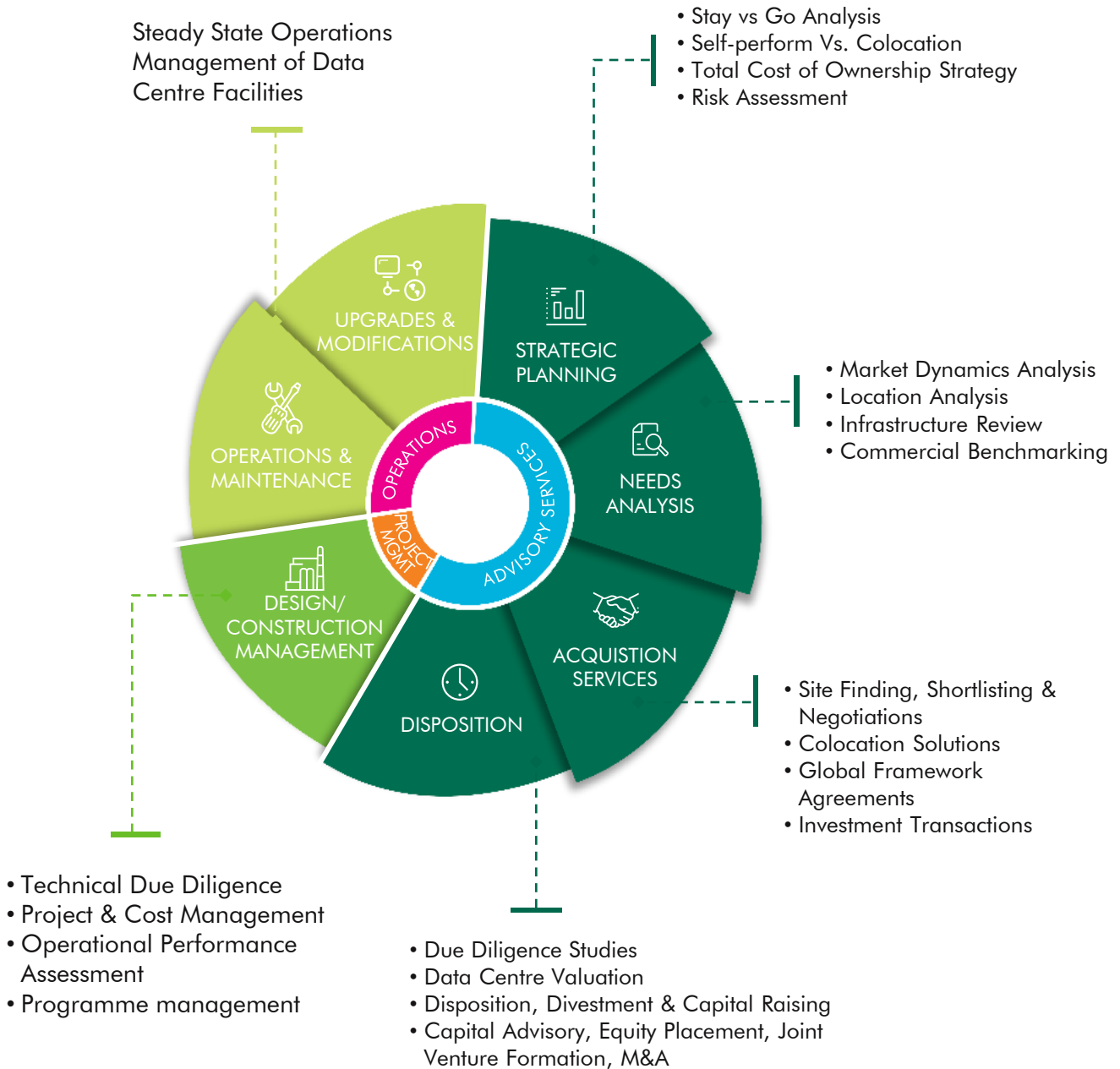
AVAILABILITY ZONE



Hyperscale cloud are comprised of Availability Zones, which are technology infrastructure in separate and distinct geographic locations with enough distance to significantly reduce the risk of a single event impacting customers' business continuity, yet near enough to provide low latency for high availability applications. Each Availability Zone has independent power, cooling, and physical security and is connected via redundant, ultra-low-latency networks.

DC 360

CBRE Data Centre Solutions provides a 360° lifecycle data centre offering to clients on a global scale. Our experts advise on every aspect of data centre requirements, from inception to disposal, for both existing and new projects."



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ASIA PACIFIC
DATA CENTRE TRENDS
H1 2021



CBRE RESEARCH

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