Global Data Centres Report

Knight Frank

2025

Capital, Power, and Innovation: The shifting landscape of global data centres

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Foreword

STEPHEN BEARD
GLOBAL HEAD OF DATA CENTRES
DEVELOPMENT & INVESTMENT

The global data centre industry stands at a pivotal crossroads – marked by both extraordinary momentum and mounting complexity. From my vantage point within this dynamic sector, it is clear that the pace of transformation is unlike anything we've seen before. Whether in the innovation hubs of North America, the connectivity hubs of Europe, or the fast-scaling digital economies of Asia-Pacific and the Middle East, data centres are now without question, the essential backbone of the world's digital infrastructure.

This year, we will see the full impact of artificial intelligence begin to unfold – no longer a future concept, but a force driving real, immediate change. The deployment of AI-specific infrastructure is rising sharply. In the United States, the race for AI dominance is intensifying, exemplified by OpenAI's ambitious $500 billion "Stargate" initiative to build next-generation AI infrastructure nationwide. In Japan, the government has unveiled plans to fund domestic AI chips and edge infrastructure to reduce dependency on foreign compute power. Meanwhile, in the UK, recent government interventions in data centre planning decisions signal a growing commitment to accelerating AI capabilities and supporting cutting-edge research infrastructure.

This wave of AI development is triggering immense pressure on existing power and cooling systems, compelling us to innovate across the board. In Frankfurt, operators are grappling with grid saturation, prompting tighter power allocation policies. In India, where digital adoption is soaring, states are fast-tracking new data centre parks with integrated renewable energy sources to keep up with enterprise demand. These regional responses highlight a global pattern: we are all being pushed to think more strategically about infrastructure, not only in terms of capacity but in terms of sustainability, localisation, and resilience.

Sustainability, in particular, has shifted from a strategic consideration to a moral and operational imperative. Across the Nordics, data centres are increasingly powered by hydropower for example. In Singapore, where land and resources are constrained, authorities have introduced a Green Data Centre Roadmap to guide sustainable growth – including targets for energy reuse effectiveness and the adoption of advanced cooling technologies.

At the same time, the evolving regulatory landscape is challenging all of us to move with care and clarity. From the EU's AI Act to Australia's new cybersecurity mandates for critical infrastructure, compliance is becoming more rigorous and cross-border in nature. This is particularly true for data sovereignty and energy reporting requirements, which now influence site selection and long-term investment strategies.

Amidst all the challenges, I remain deeply optimistic about the direction of our industry. The continued drive to adapt – working across borders, investing in emerging technologies, and designing solutions for the future – is truly encouraging. However, I also urge a measure of pragmatism. Demand profiles vary significantly from country to country, and success must be grounded in strategic, data-driven decision-making.

Operators, investors, policymakers, and partners, each have a role to play in shaping this future. The task ahead is to build infrastructure that not only supports innovation but also safeguards sustainability, security, and equity. This report explores the trends and pressures influencing capacity planning and operational strategies across global markets. I hope it provides valuable insight as you navigate this exciting and evolving landscape.

Contents

Background

Data centres underpin the seamless operation of digital economies and modern societies.

Introduction to Data Centres

WHAT ARE ‘DATA CENTRES’?

Data centres are critical hubs that power the digital world, enabling seamless connectivity, storage, and processing of vast quantities of data. These facilities support essential services, from powering global communication networks and cloud platforms, to driving innovation in artificial intelligence, healthcare, and financial systems. Data centres also ensure the reliability and speed of online transactions, streaming, and business operations, acting as the backbone of the global digital economy.

SIMILARITIES WITH TRADITIONAL REAL ESTATE SECTORS?

Although a specialised asset class, data centres share notable similarities with traditional real estate sectors, as they are fundamentally property-based assets with some unique operational requirements.

1. Location Strategy

As with offices, retail, and industrial properties, data centres rely heavily on strategic location. Proximity to end-users, access to power, reliable connectivity, and land availability drive site selection, akin to office locations prioritising talent hubs, or retail centres targeting consumer traffic.

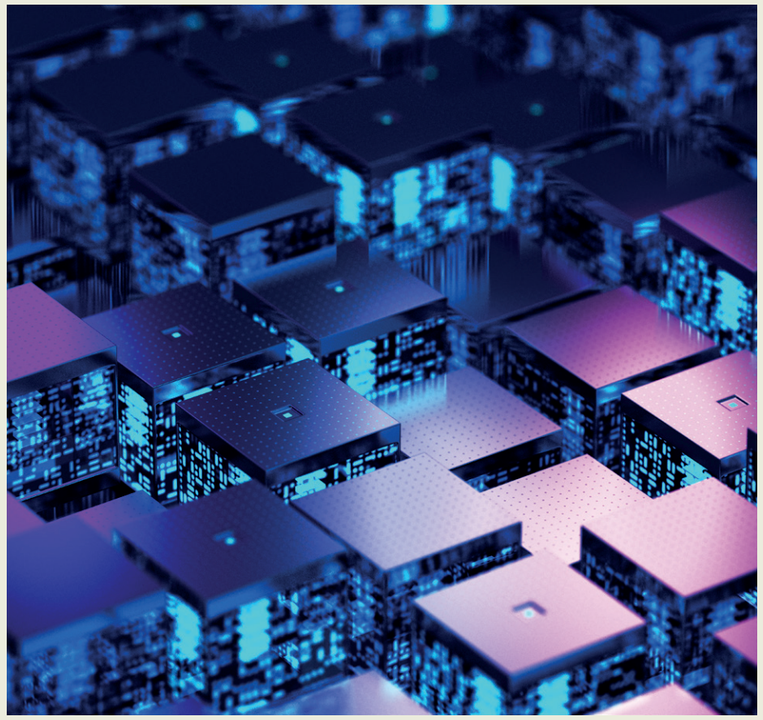
2. Tenant Demand and Leasing

Colocation data centres operate on leasing models, like the office and industrial sectors, with the major difference being the primary variable assets are leased against. Data centres are usually let on a price-per-kilowatt basis – $ per kW per Month – as opposed to the traditional price-per-square foot basis. Tenants often commit to long-term agreements for power, with hyperscalers and enterprises often signing substantial contracts.

3. Infrastructure Requirements

Much like industrial assets designed for advanced manufacturing, requiring large spaces for heavy machinery or logistics operations, data centres demand specialised infrastructure, including reinforced floors, advanced cooling systems, and energy supply redundancy.

“Data centres are critical hubs that power the digital world, enabling seamless connectivity, storage, and processing of vast quantities of data.”



TOP OPERATING MODELS

Data centres are usually developed and operated under one of three main operating models – self-build, colocation, and powered shell – each of which presenting distinct opportunities, challenges, and considerations.

1. Self-build

In this model, hyperscalers construct and operate their own facilities, bypassing colocation providers. Developers often play a key role in land acquisition, shell construction, or utility provisioning. Developers can benefit from early-revenue opportunities regarding land acquisition, alongside a stable and predictable pipeline from hyperscaler tendencies to commit to large, multi-phase developments. This model, however, eliminates recurring lease income for developers, with revenue being primarily tied to initial development and construction phases.

2. Colocation

Colocation facilities are developed and operated by the owner, leasing space, power, and cooling to multiple tenants who house their IT infrastructure on-site. This offers a diversified revenue stream from multiple tenants, reducing single-tenant reliance, as well as higher IRRs compared to other operating models. However, this model brings with it a level of operational complexity, requiring specialist sector knowledge, as the owner must manage power, cooling, maintenance, and tenant relationships. It also requires significant investment in infrastructure, and ongoing operational costs.

3. Powered Shell

In the powered shell model, the owner delivers a partially completed facility, providing the building shell, basic utilities, and power infrastructure, while tenants manage fit-out and IT operations. This offers faster development timelines and lower upfront investment, compared to colocation. It also features reduced operational burdens, alongside familiarity in lease terms, which will often be agreed on a square meter basis, more akin to traditional real estate sectors. Revenue potential, however, is lower than with colocation and tenant demand for this model is niche.

“Data centres rely heavily on strategic location. Proximity to end-users, access to power, reliable connectivity, and land availability drive site selection.”

Investment Landscape

Data centres are a compelling real estate investment, underpinned by surging data growth and demand for digital infrastructure.

Investment Case

DEMAND DRIVERS & MARKET GROWTH POTENTIAL

Data centres benefit from surging demand driven by the proliferation of cloud computing, AI applications, IoT, and digital transformation. Hyperscalers continue to expand globally, while enterprises outsource infrastructure needs to colocation providers. Emerging technologies, 5G adoption, and increasing data consumption volumes continue to fuel growth, particularly in high-density urban markets. Additionally, ESG trends are encouraging investment in energy-efficient facilities, creating opportunities in retrofitting and greenfield developments.

INCOME STABILITY

Data centres offer predictable income streams through long-term lease agreements with hyperscalers, enterprises, and colocation clients – often extending to 15+ years. Triple-net leases are frequent, passing operational costs such as maintenance and utilities to tenants. With tenants like cloud providers and financial institutions requiring uninterrupted service, high retention rates further enhance income stability. Additionally, power and cooling contracts provide incremental revenue, ensuring facilities remain profitable throughout economic cycles. Their status as mission-critical infrastructure means demand remains robust, even during downturns.

CAPEX & OPEX REQUIREMENTS

Data centres require high upfront CAPEX for land acquisition, facility construction, and power/cooling infrastructure – modern facilities built today can expect to incur build costs of £15 million per MW, with an additional 10-15% for acquiring land and power. Modern Tier-IV builds incorporate high-redundancy systems, advanced security, and energy-efficient designs, driving costs further. Ongoing OPEX includes energy, cooling, maintenance, and staffing. However, developers can mitigate costs through modular expansions and economies of scale. Owners must also address evolving tenant demands for higher power density and low-latency connectivity, requiring consistent reinvestment in infrastructure upgrades. While CAPEX-intensive, long-term operational efficiency can significantly enhance margins.

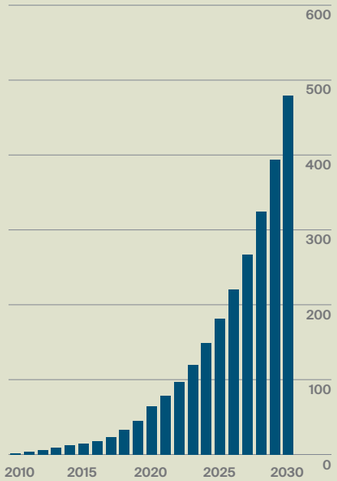
RETURN ON INVESTMENT

Despite high initial costs, data centres offer attractive ROI due to heightened demand, stable cash flows, and significant appreciation potential. Yields tend to exceed traditional real estate sectors, with prime markets generating cap rates of 4.5%-5.5%. Investors can achieve enhanced returns through lease escalations, expansion projects, and energy cost optimisation. Moreover, the growing demand for sustainable solutions and edge computing facilities provides new avenues for value creation. Exit opportunities remain robust, with high institutional interest in this asset class.

RISKS?

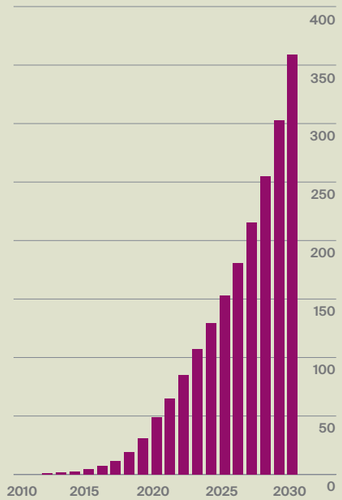
Key risks include technological obsolescence, regulatory changes, and ESG compliance challenges, especially as governments enforce stricter energy usage and carbon emissions standards. Market saturation in some regions can pressure rental rates, while over-reliance on hyperscaler tenants exposes owners to concentrated risk. Cybersecurity threats and power disruptions pose operational risks, potentially damaging reputations, and tenant relationships. Additionally, significant upfront costs and long development timelines can strain cash flows, particularly for smaller investors. A balanced strategy, diversification, and ongoing risk management are essential to navigate these challenges.

Total data created, captured, copied, and consumed
Zettabytes



Sources: Knight Frank, Statista

Global mobile data traffic
Exabytes per month



Sources: Knight Frank, Ericsson

Transaction Volumes

REAL ESTATE INVESTMENT VOLUMES

After a sharp decline in data centre transaction volumes in 2023 – down 36% due to global interest rate hikes – 2024 has seen a strong rebound. Transaction volumes, including single-asset purchases, portfolio acquisitions, redevelopment opportunities, and development site sales, surged by 118% year-on-year, reaching £24.5 billion. This rebound was, for the most, the result of large portfolio acquisitions, including Blackstone's $16 billion acquisition of the AirTrunk portfolio. The largest single-site transaction of the year was Macquarie Asset Management's, via Macquarie Korea Infrastructure Fund (MKIF), $530 million acquisition of the 40MW Hanam Data Centre (Hanam IDC) in the third quarter of 2024. The 42,000m² site is leased in its entirety to LG CNS, with a 99% power use commitment.

M&A INVESTMENT VOLUMES

M&A transaction volumes witnessed similar trends in 2024, following on from a period of lower activity in 2023. Data centre M&A activity dropped by 42% in 2023, amidst a period of macroeconomic uncertainty, valuation discrepancies, regulatory scrutiny, and power challenges. Volumes grew by 77% in 2024, exceeding transaction volumes in 2022 and just shy of those recorded in 2021, with $42.5 billion transacted over the course of the year. Blackstone and Canada Pension Plan Investment Board's $16 billion acquisition of AirTrunk was the largest transaction of the year, followed by Vantage Data Centers' $9.2 billion equity investment, and then by Mubadala Investment's $2 billion minority stake acquisition in Yondr Group. Going into 2025, $32 billion worth of deals have already been agreed and are now awaiting completion.

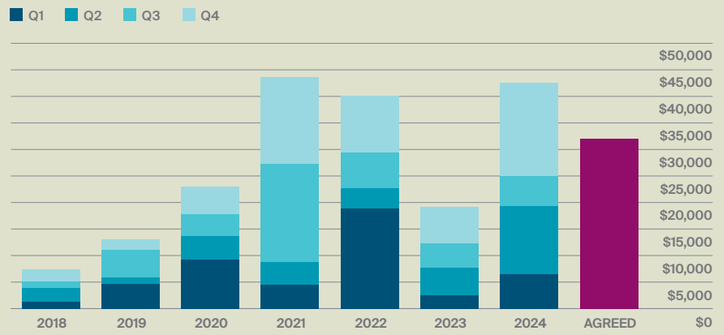
AVERAGE TRANSACTION VOLUME

Globally, the average real estate transaction value in the data sector space was £59 million in 2024, up 15% on the average transaction price in 2023, and up 44% on the pre-COVID transactions value average. Since 2019, average transaction value has grown at a compound-annual-growth-rate (CAGR) of 7.5%.

'BIG TECH' CAPITAL EXPENDITURE

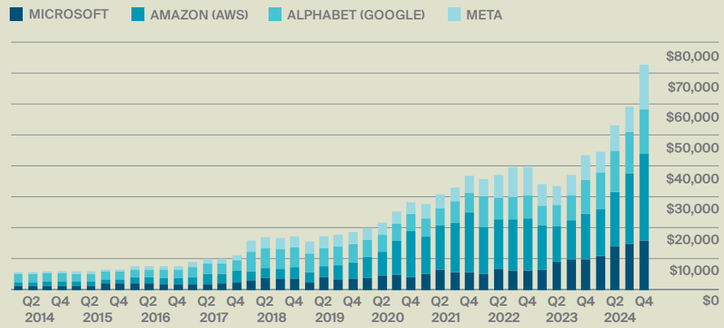
With interest rates stabilising globally, 2024 saw capital expenditure volumes amongst the four global 'Big Tech' firms – Microsoft, Amazon (AWS), Alphabet (Google), Meta – boomerang with a 55% increase on volumes recorded in 2023 – a year which saw Capex volume drop by 2.6%. Close to $228 billion was spent during 2024, with the largest contributor, Amazon, deploying just shy of $82 billion. For the coming year, this growing trend shows no signs of slowing down, with the big four announcing a combined expenditure deployment volume of $320 billion – much of which is anticipated to support the growing requirement for AI-capable infrastructure.

Global data centre M&A volumes
$ million



Sources: Knight Frank, TMT Finance, Company Financial Records

'Big Tech' capital expenditure
$ million



Sources: Knight Frank, Company Financial Records

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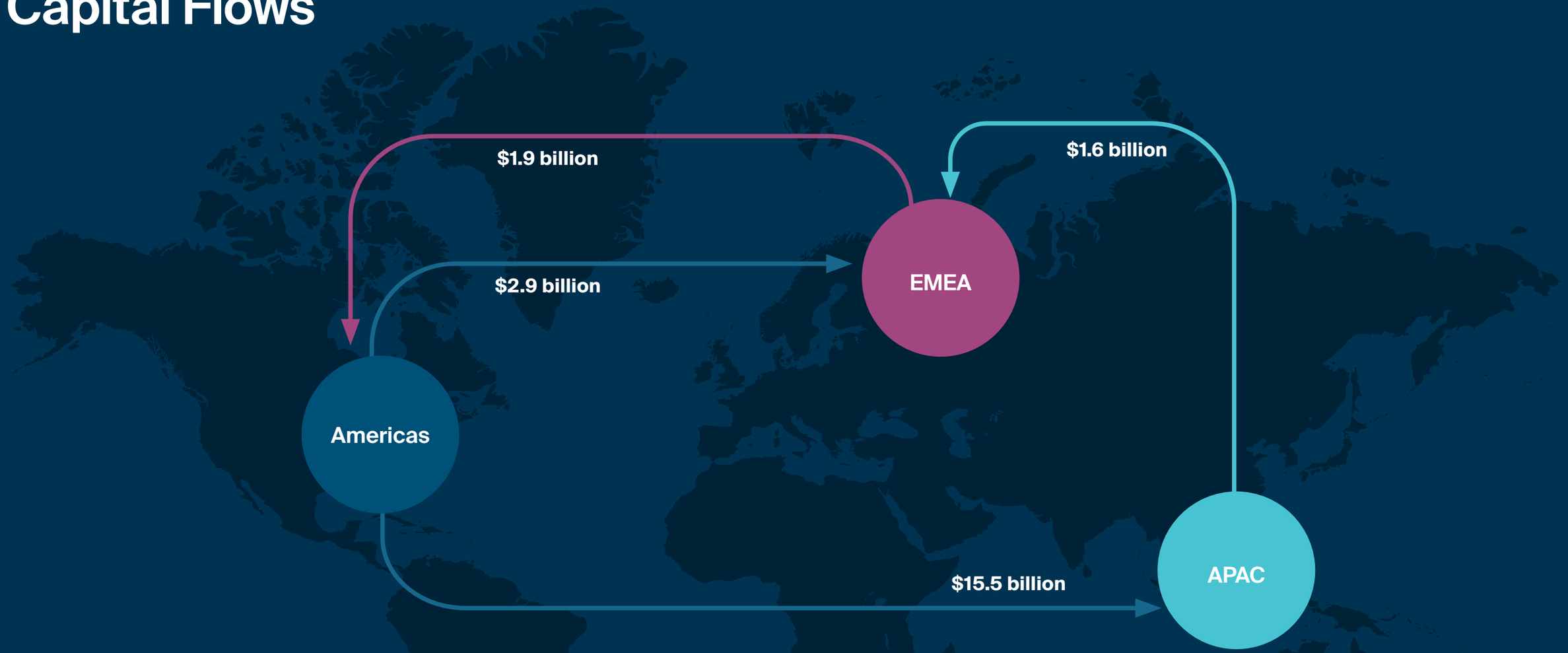
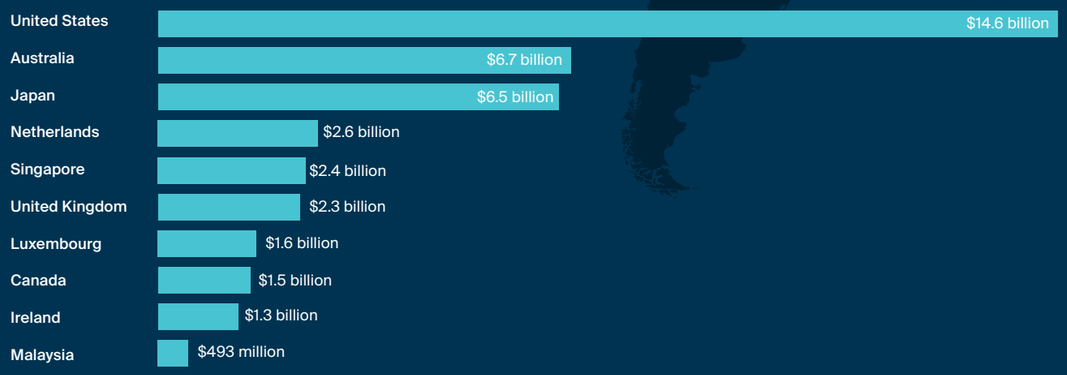
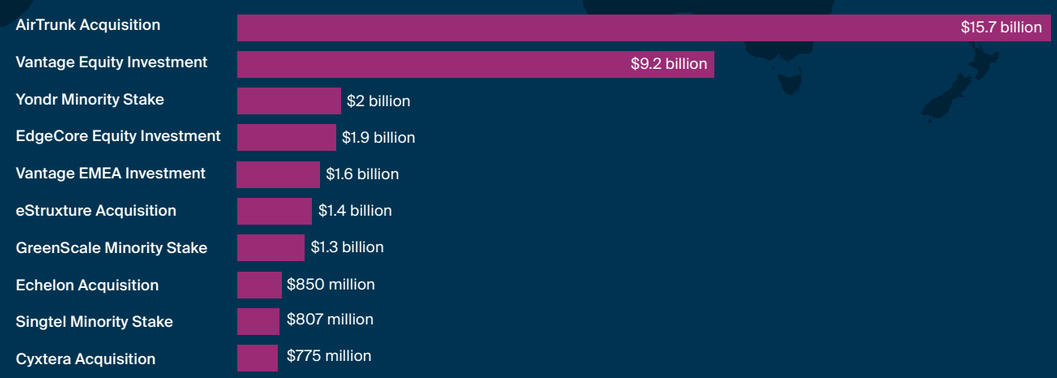
Capital Flows



TOP INVESTMENT LOCATIONS (2024)



LARGEST DEALS (2024)



Yield Profile

ALEX BURGOYNE
GLOBAL HEAD OF DATA CENTRES VALUATIONS

HOW HAVE YIELDS EVOLVED OVER THE LAST DECADE?

Over the past decade, data centre yields have tightened from 8-10% in the early 2010's to 4.5-6% in prime markets today. Data centres have transitioned from a niche investment to a core alternative real estate sector, benefitting from structural tailwinds such as cloud adoption and more recently artificial intelligence.

During the early 2010's, prime data centre yields ranged between 8-10%, reflecting a status as a niche real estate investment, owing to perceived risks such as technological obsolescence, high capital expenditure, and uncertain long-term demand. Institutional capital was scarce, and the market was dominated by specialised REITs like Digital Realty, Equinix, and CyrusOne.

The mid-to-late 2010's saw cloud adoption surge, driving demand for large-scale data centres from hyperscale tenants like Amazon Web Services, Microsoft, and Google. Investors recognised the asset class as an infrastructure-like investment, leading to increased capital flows from pension funds, sovereign wealth funds, and private equity firms. Prime hyperscale data centres in core markets such as Ashburn, Frankfurt, Singapore, and London, saw yields tighten to 5-7%. Sale-leaseback transactions became more common, as enterprises sought to monetise their owned facilities.

- In 2017, Digital Realty acquired DuPont Fabros Technology for $7.6 billion, including several sale-leaseback agreements.
- In 2018, Brookfield Infrastructure purchased a 51% stake in AT&T's data centre portfolio for $1.1 billion as part of a sale-leaseback agreement.
- In 2019, Equinix purchased three data centres from Axtel (Mexico) for $175 million in a similar transaction.

The pandemic accelerated global digital transformation, driving unprecedented demand for cloud computing, streaming, remote work, and e-commerce. Resultingly, data centres became one of the best-performing real estate sectors, leading to aggressive yield compression. Prime yields in Ashburn, London, and Singapore fell below 5%, reaching 4.5-5.5% for the best assets. Institutional investors, infrastructure funds, and sovereign wealth funds aggressively pursued investments, often at record-low yields:

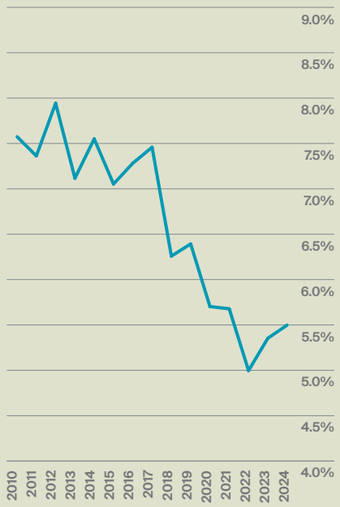
- In 2021, KKR and GIP acquired CyrusOne for $15 billion, the largest-ever data centre REIT transaction at the time. American Towers acquired CoreSite for $10.1 billion, marking its entry into the data centre space.
- In Q4 2021, Blackstone acquired the Equinix occupied LD8 facility in London Docklands for £196.5 million, representing a sub-4% capitalisation rate.

> "2022-2023 saw rising interest rates and global macroeconomic uncertainty apply upward pressure on yields across commercial real estate, including data centres."

2022-2023 saw rising interest rates and global macroeconomic uncertainty apply upward pressure on yields across commercial real estate, including data centres. While recent interest rate hikes had led to some repricing, strong fundamentals – particularly from cloud and AI demand – continued to support valuations. Prime data centre yields expanded slightly, moving back toward 5-6% in key global markets.

As of 2024, data centre yields remain compressed, but are adjusting to a new macroeconomic environment. In core markets, prime asset yields range from 4.5%-5.5%, depending on lease structure, power availability, and sustainability credentials. Secondary markets have seen yields stabilise at 6-8%, whilst emerging markets have maintained yields between 8-12%. Interest rate stability and rising AI-driven demand could prevent any further significant yield expansion, but rising development costs and power constraints could impact investor appetite.

Data centre yield profile



Source: Knight Frank

Hyperscaler / REIT Performance

CLOUD REVENUES

Public cloud providers are responsible for the majority of global data centre leasing activity, being the largest occupiers of both self-build and colocation-based data centre capacity. Cloud occupiers were responsible for 40% of leasing transactions in 2024 and have been responsible for 36% of aggregate leasing activity to date. The growth and stability of cloud-based revenue is integral to the health of the data centre industry and is an important metric for evaluating growth prospects for the market.

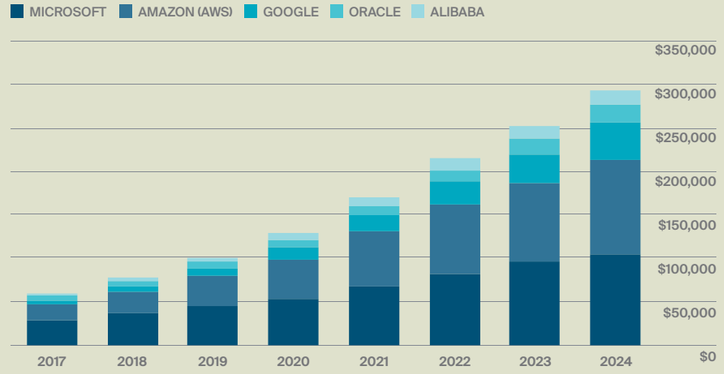
Combined cloud revenues for the four major US public cloud service providers – Microsoft, Amazon Web Services, Google, Oracle – grew by 16% in 2024 and has expanded at a compound-annual-growth-rate (CAGR) of 23% over the last four years.

S&P 500 IT AND REAL ESTATE COMPARISONS?

Since 2017, the S&P 500, S&P 500 IT, and S&P 500 Real Estate indexes have grown by 163, 471, and 35 bps, respectively. At the same time, US global cloud service providers Microsoft, Amazon, Google, and Oracle, have expanded by 564, 546, 421, and 337 bps, respectively, each of which exceeding index growth volumes for the S&P 500 index, with both Microsoft and Amazon exceeding the S&P 500 IT index.

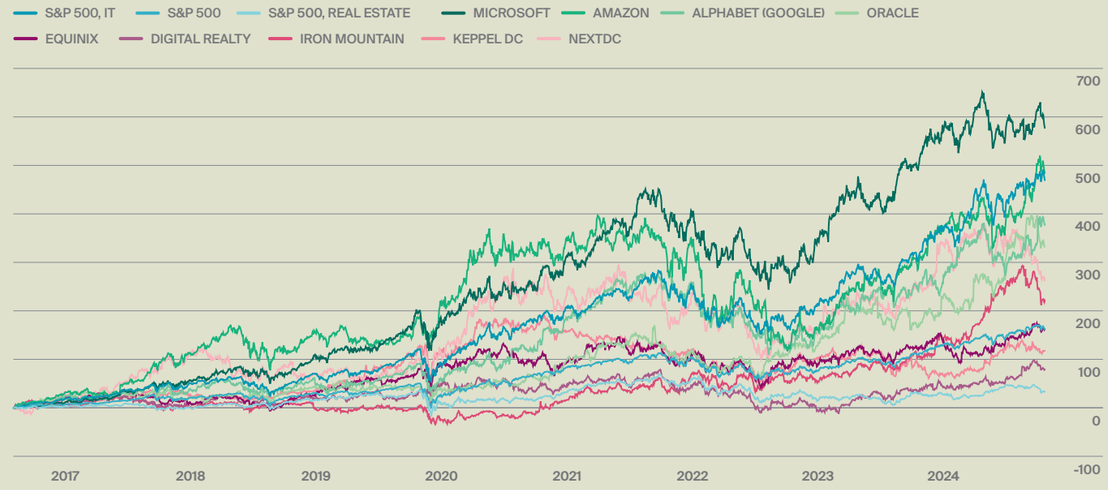
Specialised real estate investment trusts (REITs) Equinix, Digital Realty, Iron Mountain, and GDS Holdings have each grown by 159, 66, 212, and 203 bps, respectively, all of which exceeding indexed growth rates of the S&P 500 Real Estate index, alongside three of which expanding faster than the S&P 500 index as well.

Global cloud service provider revenue
$ million



Sources: Knight Frank, Company Financial Records

Indexed price returns



Sources: Knight Frank, Company Financial Records, Macrobond

Market by Market

Data centre capacity is expanding globally, underpinning economic growth and digital innovation.

Regional View

EMEA

OLIVER WESTON
ASSOCIATE

The European data centre market is growing at pace and will see substantial investment in 2025 as markets continue to be characterised by surging levels of demand – underpinned principally by the occupational dominance of Microsoft, Amazon Web Services, and Google. Knight Frank expects that the power shortages, permitting challenges, and regulatory constraints that characterised 2024 will play an even more pronounced role in 2025 – placing greater premiums on available powered land and powered shell opportunities.

Whilst FLAP-D markets will remain important for end users and developers, operators will continue to take a more agnostic approach to the established availability zone locations and will develop beyond these regions in search of land and power. We expect Tier 2 & 3 markets will experience significant growth. These markets offer relatively lower costs of land and less constrained grids, providing a greater prospect of securing power within a 3-to-5-year time horizon. In 2025 we will see the growth of markets such as Lille, Dusseldorf, Scotland & North England, Turin, Lisbon, and Bilbao. These markets will offer attractive IRR returns to early movers, provided Opcos can strategically time their market entry to match cloud & AI demand.

Finally, we expect greater flexibility and more creative inputs regarding power. This will include private wire solutions, gas turbine generation or joint ventures with renewable and battery storage companies.

Data centres are as capital intensive as they are power intensive, and there is a weight of capital wishing to deploy into the sector. There are several powered shell transactions under development currently which will provide investment opportunities for the capital markets moving forward. We will continue to see OpCo and PropCo splits as operators re-cycle capital to feed the next wave of development. Knight Frank still expect to see a yield premium of between 25 – 50 bps for standing DC investment assets over the equivalent industrial stock – reflecting the strong fundamentals of the data centre space and highly secure nature of the customer base.

APAC

FRED FITZALAN-HOWARD
HEAD OF DATA CENTRES, APAC

The APAC data centre market is positioned for aggressive growth over the coming years, driven by increasing investor interest across both Tier1 and Tier 2 markets. The high-profile acquisition of AirTrunk by Blackstone, which valued AirTrunk at AUD$24 billion, underscores the growing enthusiasm among global investors for the APAC market. This transaction is likely to catalyse a wave of M&A transactions, as competing operators seek to leverage this set valuation. Whether these valuations will sustain, or face recalibration remains to be seen.

> "The APAC data centre market is positioned for aggressive growth over the coming years, driven by increasing investor interest across both tier 1 and 2 markets."

Secondary markets across APAC will bridge gaps in capacity and drive more equitable growth across regions by closely aligning with primary regional hubs, offering competitive advantages in power availability, land options, and cost-effectiveness. Cities such as Melbourne, Chennai, and Osaka are emerging as key players, complementing the established markets in Sydney, Mumbai, and Tokyo.

Although the APAC data centre market is relatively nascent compared to the mature ecosystems of the US and Europe, it continues to face challenges. Key hubs like Singapore, Tokyo, and Sydney have reached higher levels of maturity, but many other regions struggle with regulatory inconsistencies, power shortages, and land scarcity. In India, data centre operators frequently encounter delays due to a lack of standardised regulations across states. Similarly, emerging markets such as Vietnam and Indonesia grapple with unreliable power infrastructure, while the Philippines and Thailand face difficulties in cultivating a specialised workforce to design, build, and maintain data centre facilities. These issues highlight the uneven development within the region and underline the complexities of scaling the market effectively.

As the APAC data centre market expands, the outlook for artificial intelligence (AI) integration adds another layer of excitement. While current AI deployments in the region are in their infancy verses the US and Europe, they present tremendous opportunities for growth, with pilot projects and early-stage investments laying the groundworks for AI infrastructure rollouts. Although the fragmented regulatory landscape raises concerns, combined with US export regulations targeting Chinese procurement of AI across APAC, the APAC market is well-positioned to embrace this innovation.

NORTH AMERICA

JASON SHEPARD
MANAGING PRINCIPAL, CRESA MCS

North America is the most capacity-rich region in the world, hosting almost half of global live IT capacity. It is supported by an abundance of suitable land, access to power, and strong investment. Almost 3GW was deployed in 2024, with a further 11GW expected over the next two years.

The entrance of artificial intelligence (AI) into the sector has resulted in historically low vacancy rates, surging rental rate costs, and increasing lead times for critical infrastructure. The downstream impact has been a squeeze on enterprise customers of colocation facilities and the rapid expansion of colocation operators and developers building powered-shell facilities capable of servicing various data centre demand cases.

According to AFCOM's 2023 State of the Data Centre Study, 64% of respondents replied that the acceptable latency for distributed infrastructure requirements was twenty milliseconds (ms) or less. While the low latency requirements are often associated with traditional enterprise data centre tenants, these needs also apply to the cloud operators providing services to other data centre operator types.

A primary challenge facing the data centre industry is securing not only suitable power infrastructure serving properties for development but also the energy supply to power these facilities. According to Cresa MCS analysis of Q1 2024 US EIA data, circa. 72% of the 175,000 megawatts (MW) of planned or under-construction power capacity in the United States are via solar or wind sources. While solar & wind power generation satisfies green initiatives, their intermittent supply conflicts with the always on operations needs of the data centre sector.

While 2024 introduced the concept of gigawatt data centre campuses, many electric utilities were pushed into re-evaluation based on existing & future capacity/energy generation supply concerns. We believe limitations on stabilised base energy supply will prompt data centre operators and developers to respond with smaller, more manageable deployments and increased use of on-site cogeneration to reduce reliance on utility providers.

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Primary Markets

ASHBURN, VIRGINIA

Ashburn, Virginia, is the world's largest and most established data centre hub, forming the core of Northern Virginia's "Data Centre Alley." Home to the highest concentration of cloud and colocation facilities globally, Ashburn benefits from a robust fibre network, competitive power pricing, and proximity to major enterprise and government clients. The market continues to see significant hyperscale expansion, with high levels of pre-leasing driven by strong demand from cloud providers. Despite land constraints and increasing power availability challenges, Ashburn remains the dominant global data centre market, setting benchmarks for capacity, pricing, and innovation.

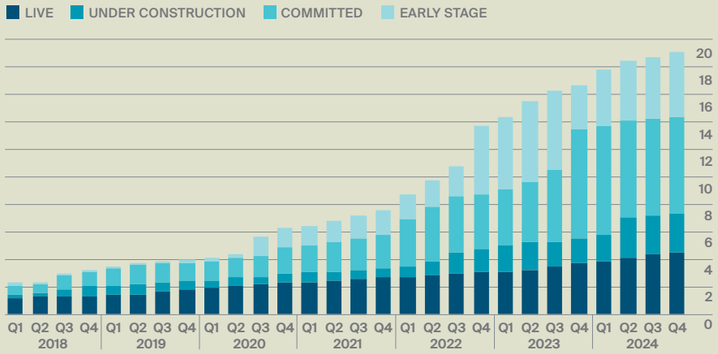
The market has amassed a data centre ecosystem that includes 4.5GW of built IT capacity, with almost 15GW across both its construction and long-term pipelines. Approximately 1.4GW of colocation capacity was absorbed during the year, 89% of which involving the pre-leasing of upcoming capacity deployments. Deployment desires from hyperscale data centre operators and tenants remain strong, with capital availability for the region high – Microsoft, in Q1 2024, acquired a 124-acre site in Virginia's Prince William County for $465.5 million, whilst CyrusOne spent $154 million acquiring a 60MW facility it was already occupying – a rate of $2.6 million per MW.

COLUMBUS, OHIO

Columbus has rapidly emerged as a key data centre market in the Midwest, driven by strong enterprise demand, an attractive business environment, and increasing interest from hyperscale operators. The region benefits from affordable and reliable power, a central location with excellent connectivity, and a pro-business climate that includes tax incentives for data centre development. With major investments from cloud and technology firms, Columbus is establishing itself as a strategic alternative to other large Midwest markets such as Chicago, offering scalability and cost advantages.

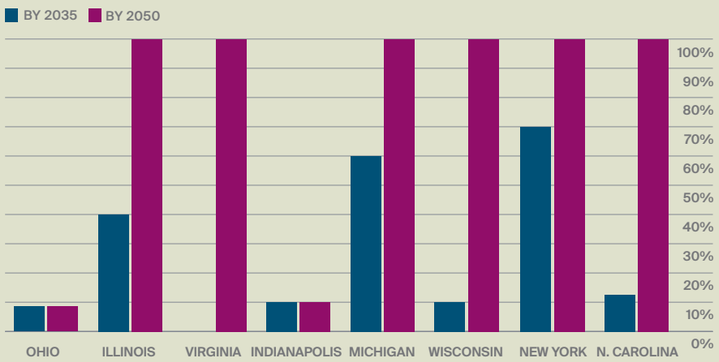
Cross-state differences in renewable & clean energy standards are benefitting markets such as Columbus, featuring either no renewable energy requirements or ones which are notably more lenient. The state of Illinois, which features the competing market of Chicago, increased in September 2021 the Renewable Portfolio Standard (RPS) to require 50% renewable energy by 2040, with the policy of the state to rapidly transition to 100% clean energy by 2050. Ohio, in comparison, has set an RPS requirement of 8.5%. Resultingly, developers and operators may find greater flexibility in how they choose to approach ESG requirements, or, in the case of ESG sensitive hyperscalers – such as Microsoft & AWS – may engage in private solutions, such as PPA's – Microsoft, for example, signed a 125MW solar PPA in Q1 2024.

Ashburn supply development
GW



Sources: Knight Frank, DC Byte

Renewable & clean energy standards
Renewable portfolio standard (%)



Source: Knight Frank

Primary Markets

LONDON, UNITED KINGDOM

London is Europe's largest data centre market and a critical global interconnection hub, benefiting from its strong financial services sector, extensive fibre infrastructure, and direct subsea connectivity to North America and mainland Europe. The market has seen sustained demand from hyperscale and enterprise users, particularly in Slough, which remains a key data centre cluster. However, constraints on land availability and power supply in certain areas, particularly within the M25, have driven operators to explore expansion in surrounding regions, such as Crawley and the Thames Valley. Despite regulatory and power challenges, London remains a primary gateway for digital infrastructure investment in Europe.

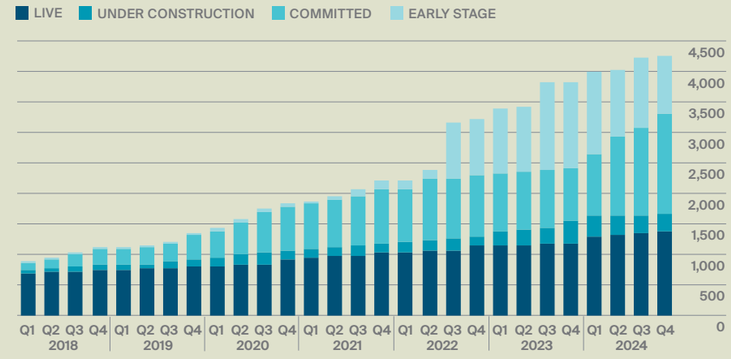
UK energy infrastructure shortfalls are triggering an acceleration in the volume of projects being unable to attain necessary power permits – lead times in the UK, particularly in west London, have reached 10+ years. The government has pledged to prioritise data centre planning applications, stating, "If you're looking at where to build your data centres, we will speed up planning permission". To compliment this, in September 2024, data centres were classified as 'Critical National Infrastructure'. However, any such pledges are likely to be futile without accelerated development of the nation's power infrastructure.

FRANKFURT, GERMANY

Frankfurt is a dominant data centre hub in Europe, serving as Germany's financial capital, and a key connectivity node due to DE-CIX, one of the world's largest internet exchanges. The market continues to attract hyperscale and enterprise investment, with ongoing expansions despite strict planning regulations and power constraints. Frankfurt benefits from a strong colocation ecosystem, high demand from cloud service providers, and a strategic location for businesses looking to serve both Western and Eastern European markets.

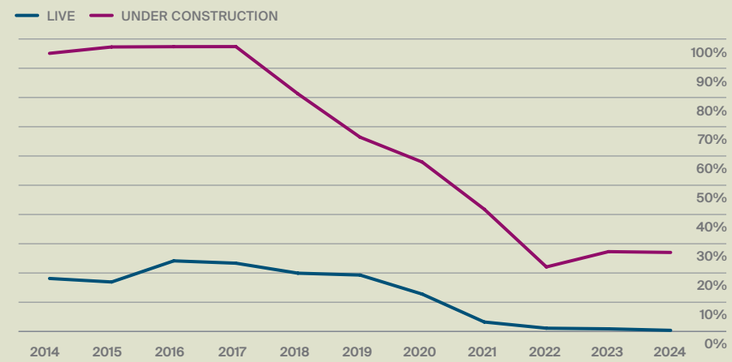
It is one of the most supply constrained markets in the world, operating at a sub-1% vacancy rate, with no capacity capable of servicing any hyperscale demand available. As a result, more and more occupiers are engaging in pre-lease agreements, which has culminated in 75% of the market's under construction volumes being pre-let, as well as almost half of its committed volumes (mid-to-long term) being pre-leased. Colocation leasing activity is severely dominated by requirements from public cloud providers, who have accounted for 78.8% of colocation lease agreements to date (live and pre-lease agreements), with the remainder scattered across tenant-specific enterprise requirements.

London supply development
MW



Sources: Knight Frank, DC Byte

Frankfurt vacancy rates
% of space available



Source: Knight Frank

Primary Markets

TOKYO, JAPAN

Tokyo remains one of the most sought-after markets in APAC, but severe power constraints are reshaping development strategies. The Tokyo Metropolitan Government has restricted new power approvals in central Tokyo, encouraging data centre operators to expand into regional areas. To support this decentralisation, the government is offering subsidies for large-scale projects outside Tokyo, alleviating pressure on urban power grids while strengthening regional infrastructure. Key locational moves, such as Air Trunk developing a 110 MW in Ome (61 km from Tokyo) or PDG 48MW IT in Saitama (30.4 km from Tokyo), accentuate this movement to more geographically diverse locations with less grid pressure.

As power availability tightens and general contractors become even less available, global data centre operators looking to enter Japan are turning to domestic developers to navigate the complex regulatory, land acquisition, and energy procurement landscape. Key examples of this are Digital Realty & Mistubishi, Keppel & Mitsui Fidosan or STT & Goodman. The local real estate expertise of these developers enabled them to acquire large land parcels, negotiate complex power contracts and secure GCs, whilst the incoming operators bring their experience in designing & operating data centres and most importantly, a global relationship with US hyperscale providers.

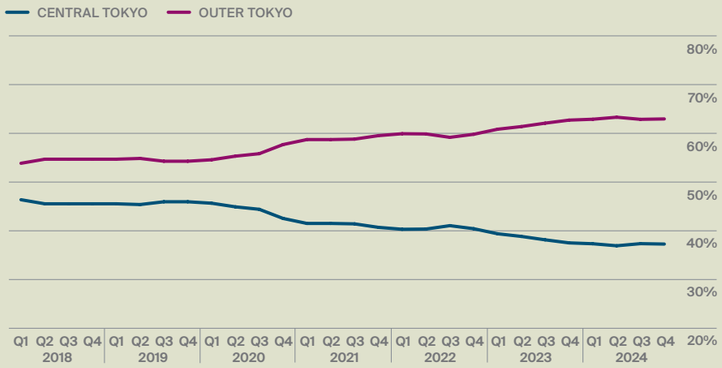
SINGAPORE

Singapore's data centre market, a gigawatt-scale hub, has become one of the most competitive and high-value landscapes for kW rack transactions, driven by a supply-demand imbalance that has reshaped colocation leasing dynamics. From 2019 to 2022, a government-imposed moratorium on new data centre construction restricted capacity growth, halting new developments and tightening the availability of colocation space. While the market reopened in 2022, only a limited number of highly efficient projects were approved, and strict regulatory controls have kept supply constrained.

With vacancy rates below 1%, the main liquidity of transactions has shifted towards smaller rack deals, despite Singapore's standing as a large-scale market. These fractional capacity deals have surged in pricing with some operators securing pricing at $1,000 USD+. Investors and operators continue to recognize the profitability of these small-scale transactions, with colocation providers rapidly leasing out available capacity at premium prices.

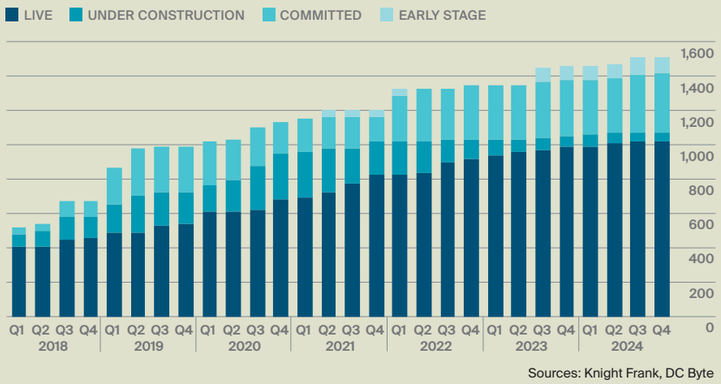
Of the four operators that were allocated 20MW each in July 2023, only Equinix have started construction, with Microsoft, AirTrunk and Day One yet to commence construction. Given the demand for hyperscale capacity in the Singapore market, it is envisaged all these assets will be pre-let well before completion.

Tokyo supply geography
%



Source: Knight Frank

Singapore supply development
MW



Sources: Knight Frank, DC Byte

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Primary Markets

DUBLIN, IRELAND

Dublin has established itself as a leading European data centre market, particularly favoured by hyperscale cloud providers due to Ireland's corporate tax advantages and strong connectivity to the US and Europe. The city's data centre industry has grown significantly over the past decade, driven by major investments from the largest global cloud firms. However, power availability constraints and growing regulatory scrutiny over energy consumption have started to impact future development.

Operating under a de-facto moratorium – imposed not by the Irish government, but instead the state-owned grid operator EirGrid – no new data centre applications are to be considered until 2028 at the earliest, with new application consideration having been stopped in the first quarter of 2022. Resultingly, live IT compound-annual-growth-rates (CAGR) have fallen from 36.1% pre-moratorium to 15.2% post-moratorium and are expected to decline further to circa. 4% by 2029 as approved project pipelines begin to exhaust. Amid these severe power constraints, which are unlikely to be tackled until the end of the decade, Dublin could miss out on the latest AI boom and next wave AI deployment.

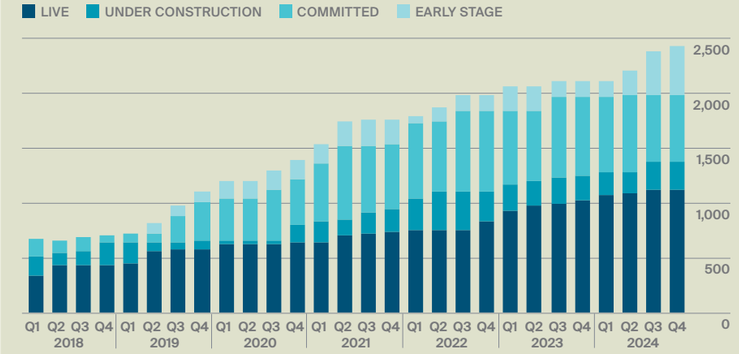
MELBOURNE, AUSTRALIA

Australia's data centre market has gained significant momentum following the recent U.S. ruling that grants the country privileged access to Nvidia AI chips. As one of only four nations in APAC exempt from any export restrictions, Australia now holds a strategic advantage in the AI race, attracting increased investment from hyperscalers and enterprises looking to deploy next-generation infrastructure. With restrictions tightening in other APAC regions, Melbourne is emerging as a key location for AI-driven data centre growth.

Traditionally viewed as a secondary market to Sydney, Melbourne is rising as a key data centre hub as power availability becomes increasingly difficult in Sydney and land scarcity intensifies. The state of Victoria is also taking a more proactive approach to approving data centre applications versus New South Wales. Hyperscalers and colocation providers are accelerating large-scale investments in Melbourne, tapping into its growing AI and cloud demand to establish high-performance computing infrastructure.

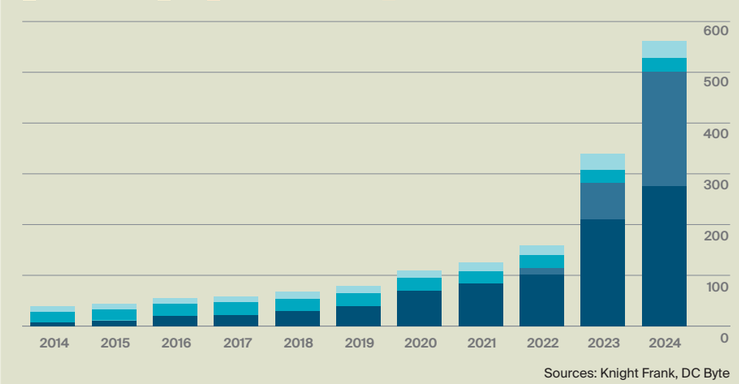
A major shift towards ultra-high-density deployments is now redefining the city's data centre landscape. AI workloads require significantly more power, pushing rack densities from 30-40kW to over 80kW. This has intensified competition for high-density-ready colocation space, with operators racing to integrate liquid cooling and power distribution upgrades. As AI adoption continues to reshape infrastructure needs, Melbourne is rapidly transforming into a critical destination for next-generation digital infrastructure in APAC.

Dublin supply development
MW



Sources: Knight Frank, DC Byte

Melbourne colocation leasing sectors
MW



Sources: Knight Frank, DC Byte

Momentum Markets

PHOENIX, ARIZONA

Phoenix is one of the fastest-growing data centre markets in the United States, offering operators a business-friendly environment, low disaster risk, and relatively affordable power – 7.37 ct/kWh in Arizona versus 19.8 ct/kWh in California. Resultingly, the city has become a key alternative to California-based, and particularly Los Angeles-based, deployments, with hyperscale, colocation, and enterprise data centre operators capitalising on Phoenix's scalability and comparative affordability. More favourable RPS requirements – Arizona: 15% by 2025 versus California: 60% by 2030 and 100% by 2045 – as well as a circa. 11ms roundtrip latency between Los Angeles and Phoenix has further bolstered this migration.

Phoenix operates one of the most supply constrained markets in the United States, with less than 23MW of unleased colocation space in the market, representing a vacancy rate of 4.25% – Ashburn is the only mature data centre market in the US with a lower vacancy rate. Supply constrains in Phoenix are unlikely to correct soon, with power availability remaining a major concern in the market. Resultingly, cities such as Mesa, Chandler, and Phoenix have each sought to limit development, inciting land acquisition in neighbouring regions such as Goodyear and Avondale.

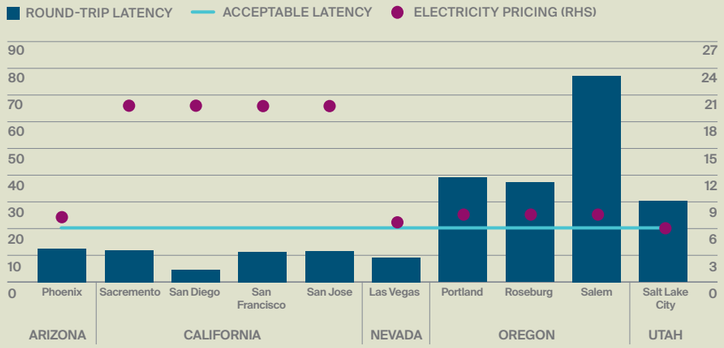
ATLANTA, GEORGIA

Atlanta has established itself as the major data centre hub of Southeastern United States, with hyperscalers and colocation providers continuing to expand their footprints in an increasing trend involving the development of multi-facility campuses. Atlanta's favourable climate for business expansion, combined with tax incentives and abundant land availability, positions it as a key growth market in the US.

Despite new legislation being passed by the Atlanta City Council limiting data centre development near the Beltline and within proximity of MARTA stations, developers have increasingly looked outwards towards suburban Atlanta and its surrounding areas for large parcels of suitable land, capable of supporting campus-scale development – EdgeConneX, in Q3 2024, acquired a 65 acre site southwest of Atlanta, upon which it plans to develop a three-facility campus capable of supporting 324MW, the first phase of which is due to complete in 2026.

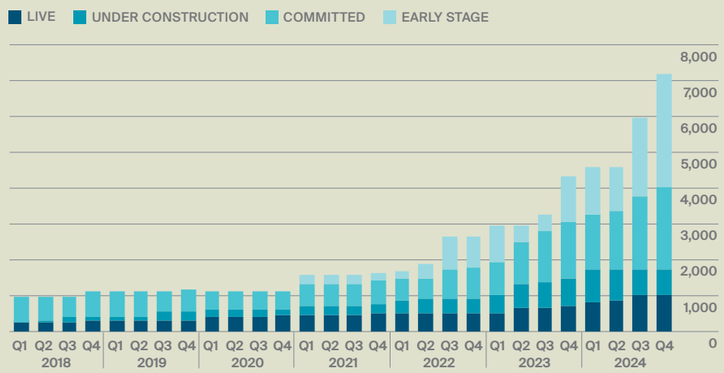
Georgia Power – the investor-owned utility provider to most of Georgia's counties, which is currently managing a backlog of 34GW in connection requests – had, in Q2 2024, its plan to use fossil fuels to power data centres approved, in a move that will increase power capacity for the region by 1.4GW via three new natural gas or oil-burning generators, as well as solar battery facilities.

Round-trip latency from/to Los Angeles
Milliseconds / Cents per Kilowatt-hour



Source: Knight Frank

Atlanta supply development
MW



Sources: Knight Frank, DC Byte

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Momentum Markets

PARIS, FRANCE

Despite having fallen behind its FLAP-D counterparts in recent years – Frankfurt, London, Amsterdam, Dublin – recent surging interest in the market has propelled it to being one of the fastest expanding markets in Europe. Paris fosters the third largest development pipeline across FLAP-D, with 283MW worth of deployment expected over the next two years. Aggregate supply volumes in the market grew by 32.7% in 2024, following 429MW of new projects being announced – this included a 120MW expansion from DATA4 and a combined 180MW deployment from Goodman across two separate sites in the city.

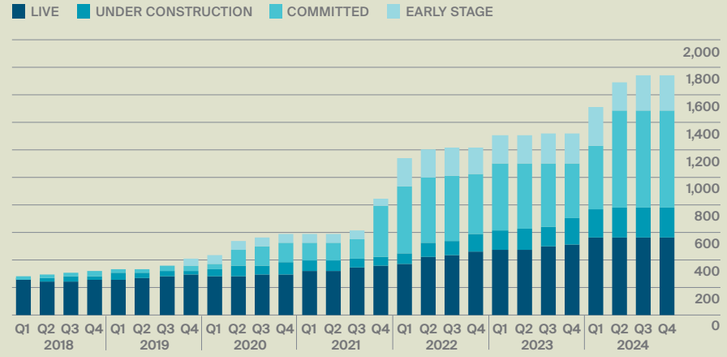
France has set it sights on becoming a leading AI hub in Europe, with president Macron announcing recently, at its AI Action Summit, €109 billion worth of investment in its AI sector, roughly 75% of which will be directed towards the construction of data centres and digital infrastructure. The largest announcement came from MGX Fund Management – a consortium led by Mubadala & G42 – which announced development plans for a new €30-€50 billion 1GW data centre campus. Brookfield announced a €15 billion investment into four new data centres, Fluidstack unveiled plans for a €10 billion 1GW AI supercomputer, whilst Digital Realty disclosed €6 billion towards thirteen data centres.

MILAN, ITALY

Milan has become Italy's primary data centre hub, benefiting from its role as the country's financial capital and a key connectivity point between Southern and Central Europe. The market has attracted increasing investment from hyperscale cloud providers and colocation operators, drawn by growing enterprise demand and improving network infrastructure. Milan's strategic location, coupled with Italy's increasing digital transformation efforts, has positioned it as an emerging European data centre hotspot. However, challenges such as rising energy costs and grid stability concerns remain key factors for operators navigating expansion in the region.

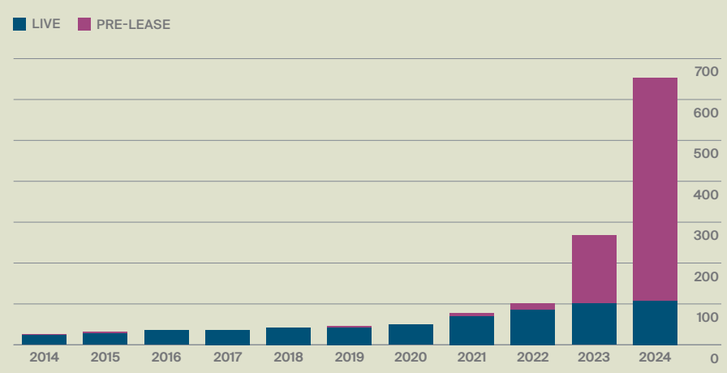
Aggregate supply volumes in the market have soared since 2020, having grown from 185MW in 2020 to over 2GW in 2024 – although, half of aggregate supply volumes are considered 'early stage' and unlikely to be delivered in any meaningful capacity before 2030. Demand from public cloud providers is driving investment into Milan's data centre market, with 92% of colocation leasing activity to date – built and pre-let – the result of public cloud-based tenants. Global cloud service providers Microsoft, Amazon Web Services, Google, and Oracle each have an established cloud region in the city, with further regional developments planned by both Google and Oracle.

Paris supply development
MW



Sources: Knight Frank, DC Byte

Milan colocation leasing trends | live vs pre-lease
MW (Cumulative)



Source: Knight Frank

Momentum Markets

MUMBAI, INDIA

AWS is transforming Mumbai's data centre market by primarily scaling through colocation. While it has undertaken only a few self-build projects, AWS is leasing large amounts of capacity from third-party operators. This approach has made Mumbai one of the most competitive leasing markets in APAC.

With AWS aggressively expanding, the competition among colocation providers has intensified. Operators must design their facilities to meet hyperscaler demands, focusing on scalability, energy efficiency, and high-density configurations. The ability to deliver custom-built solutions that integrate seamlessly with AWS's infrastructure has become a key factor in securing long-term leases. A notable example is CapitaLand's 90MW data centre campus in Navi Mumbai, developed specifically to support hyperscalers like AWS. This facility is designed with rapid scalability and high-density capacity, aligning perfectly with AWS's growth needs.

These large-scale colocation deals are driving the expansion of Mumbai's availability zones (AZs). Currently, Mumbai has three AZs, but their footprint is growing with deployments spreading from Airoli and Juinagar to Panvel. As AWS continues to scale, Mumbai's colocation ecosystem is evolving to meet demand, reinforcing the city's status as India's most critical digital infrastructure hub.

JOHOR, MALAYSIA

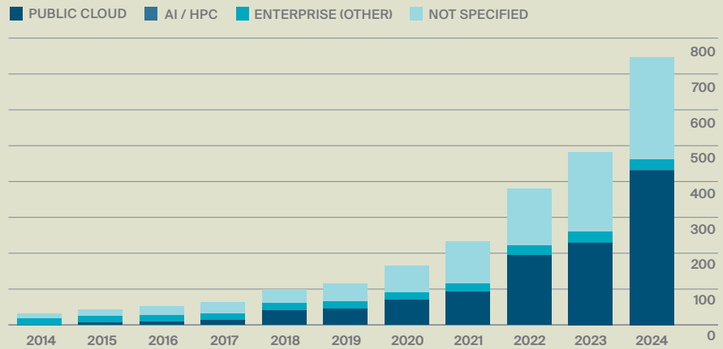
With Singapore's data centre market facing land scarcity, strict regulations, and rising costs, Johor has become the natural spillover destination for hyperscalers looking to expand in Southeast Asia. The region offers significantly lower land and electricity costs, making it a far more affordable option for large-scale deployments. Beyond cost benefits, Johor's faster approval processes and business-friendly policies enable rapid development, making it one of the fastest-growing data centre hubs in the region.

A new market has emerged in Johor, not only attracting traditional Western hyperscalers but also seeing significant deployments from ByteDance, Alibaba, and Sea Group. These companies, which had not previously expanded at such scale in APAC, are now making major investments, mainly for high density AI deployments. ByteDance, for example, has rapidly expanded its footprint, partnering with multiple operators that can deliver large capacities on accelerated timelines.

This speed to market has been a key factor driving Johor's appeal. With streamlined processes and projects being completed in record time (c.12 months), data centre providers can meet hyperscalers' urgent demand for capacity far faster than in other regional locations. As a result, Johor is no longer just an alternative market – it has become a primary hub for hyperscaler expansion in Southeast Asia, fuelled by cost advantages, scalability, and unmatched deployment speed.

Mumbai colocation leasing sectors

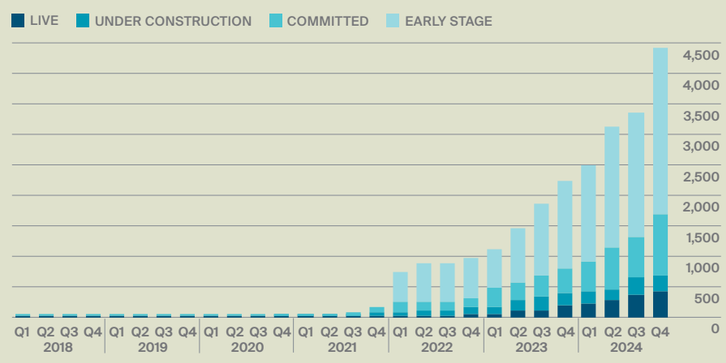
MW



Sources: Knight Frank, DC Byte

Johor supply development

MW



Sources: Knight Frank, DC Byte

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Momentum Markets

ABU DHABI, UNITED ARAB EMIRATES

Abu Dhabi is a stronghold for Microsoft with an investment of $1.5 billion in G42 to accelerate AI development, positioning the UAE as a key player in the global AI and cloud computing sectors. Between both markets there will be 500MW of live IT within the next few years. Oracle is also making major moves, a significant move to boost its presence in Abu Dhabi, planning to increase its investment five-fold to meet the rising demand for cloud and AI solutions in the UAE. Nick Redshaw, Oracle's Senior Vice President for Technology, Cloud and UAE Country Leader, confirmed the plan in an interview with The National, signalling the growing importance of the region in Oracle's global strategy. Although the exact investment figure hasn't been disclosed, Redshaw emphasised the rising competition and collaboration in the cloud space. Oracle's expansion in Abu Dhabi, including its existing UAE Central Cloud region, is poised to accelerate innovation, especially with the recent partnership with telecom giant Du to create a sovereign cloud platform. This platform will also integrate AI services tailored for UAE government needs, marking a significant milestone in the country's digital transformation.

In addition to its regional cloud infrastructure, Oracle's expansion aligns with the UAE's broader goal of developing a robust digital ecosystem. With several global and regional players like AWS, Microsoft, and Khazna Data Centers also operating in Abu Dhabi, Oracle's enhanced investment will further solidify the city's role as a hub for cloud technology and AI in the Middle East.

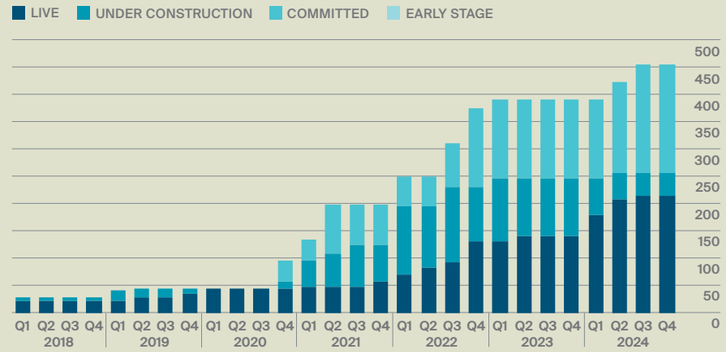
JOHANNESBURG, SOUTH AFRICA

Johannesburg is the largest and most developed data centre market in Africa, serving as a critical gateway for digital infrastructure investment across the continent. The city benefits from strong fibre connectivity, a well-established enterprise sector, and a growing cloud presence from global hyperscale operators – including cloud regions from Microsoft, Amazon Web Services, Google, Oracle, and Huawei, as well as an edge location with Alibaba Cloud.

With increasing interest in Africa's digital economy, Johannesburg continues to attract significant new data centre developments, though challenges such as power reliability and regulatory considerations remain. Close to 114MW is expected to deploy in the market over the next two years, representing an 82% growth in the market's built IT capacity offerings. Public cloud provisioning will continue to be the driving demand force behind colocation leasing, having been responsible for 77% of lease agreements to date. Managed service providers will represent a significant volume of lease agreements as enterprise in South Africa continue to digitise, ensuring business can effectively deploy and optimise their IT environments.

Abu Dhabi supply development

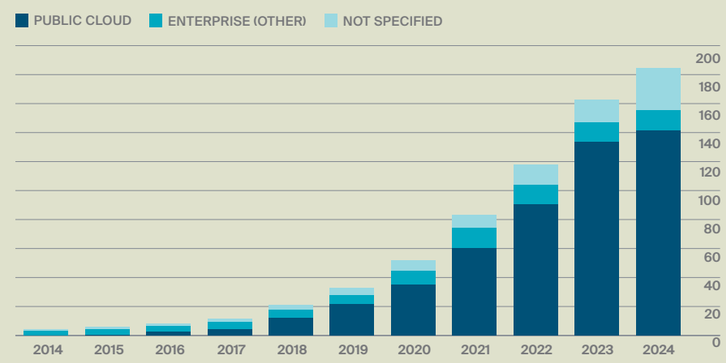
MW



Sources: Knight Frank, DC Byte

Johannesburg colocation leasing sectors

MW



Sources: Knight Frank, DC Byte

Emerging Markets

MINNEAPOLIS

Minneapolis is an emerging data centre market in the Upper Midwest, benefiting from its strong enterprise sector, reliable power infrastructure, and relatively low natural disaster risk. Minneapolis' central location provides strong connectivity to both East and West Coast markets, while its cool climate offers natural advantages for energy-efficient cooling. While not yet a primary hyperscale destination, the city's growing demand for digital infrastructure positions it as a strategic regional data centre hub, with strong initial interest from hyperscalers and colocation alike.

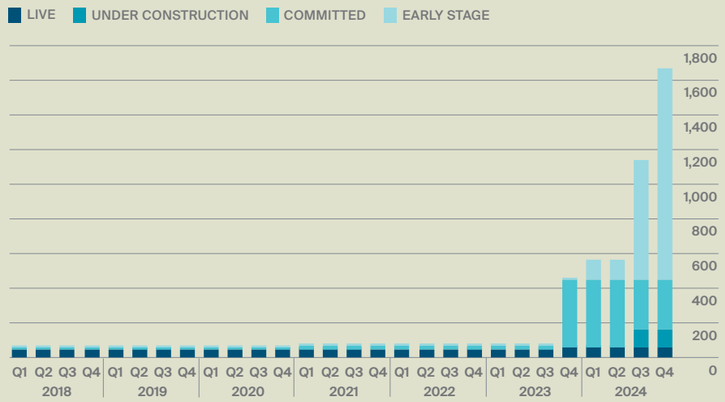
Following announcements from CloudHQ and Meta in the fourth quarter of 2023 – featuring new 180MW and 193.6MW developments, respectively – 2024 has seen continued interest from Amazon Web Services (AWS) and Microsoft seeking to enter the market, alongside hyperscale-development plans from Archer Data Centers and Tract. AWS is seeking to develop a 250MW facility in Becker, having purchased 348 acres of land in the fourth quarter of the year for $73.6 million, whilst Microsoft had previously acquired 300 acres of land in Becker at the start of the year for $17.7 million, upon which it plans to develop an initial 113.2MW.

NORWAY

Norway has become a leading market for sustainable data centre development, benefiting from abundant renewable energy, particularly hydroelectric power, and a naturally cool climate that reduces cooling costs. The country's data centre industry has attracted hyperscale and enterprise investment due to its strong environmental credentials and increasing demand for green digital infrastructure. While Norway's remote location and higher latency to major European hubs present some challenges, its government-backed incentives and commitment to sustainability make it an attractive option for operators seeking eco-friendly solutions.

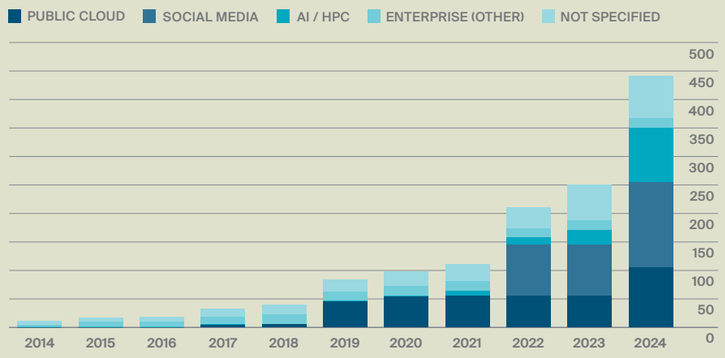
Resulting from its abundant natural resources and strong land stock availability, the market has established itself as a natural AI-favourable location. As of the end of 2024, 25.2% of colocation leasing activity has been the result of AI-based demand, with a further 4.3% the result of HPC-led demand – volume calculations ignore build-to-suit requirements from TikTok. This makes Norway one of the only markets in the world where live AI-based capacity volumes exceed those of live cloud-based deployments. Key tenants of AI and HPC capacity in Norway include CoreWeave, Taiga Cloud, NexGen Cloud, Gcore, and Crusoe Cloud.

Minneapolis supply development
MW



Sources: Knight Frank, DC Byte

Norway colocation leasing sectors
MW



Sources: Knight Frank, DC Byte

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Emerging Markets

BANGKOK

Bangkok has emerged as a key hub for hyperscaler self-builds, with major cloud providers opting to develop their own large-scale campuses rather than leasing colocation space. Amazon Web Services (AWS) has taken the lead, securing three sites in the Chonburi region, where land and power availability have enabled fast-tracked capacity delivery. Google has followed suit, committing over $1 billion to cloud infrastructure, focusing on self-builds across Greater Bangkok.

With land and power costs significantly lower than in other Tier 1 APAC cities, hyperscalers can achieve rapid deployment while maintaining operational control. However, despite the market's potential to become a gigawatt-scale hub, the extent to which colocation will play a role remains uncertain. Unlike in Singapore or Mumbai, where colocation providers compete aggressively for hyperscaler demand, Bangkok's low barriers to entry make self-builds the preferred choice.

Adding complexity, AI diffusion laws have introduced uncertainty regarding Thailand's role in the AI-driven regional data centre market. Securing GPUs in Thailand has been made more difficult given the country's position as a 'Tier 2' market under US export laws, potentially limiting AI workloads in the region. As a result, colocation providers may reconsider large-scale AI-focused data centre pipelines. While Chinese cloud providers like Huawei and Tencent continue to lease colocation space, hyperscaler-led self-builds and AI regulations may shape Bangkok's trajectory, leaving colocation operators to navigate an evolving market with shifting priorities.

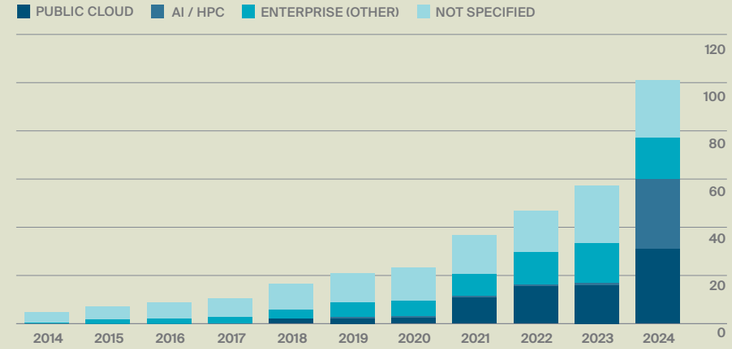
DAMMAM

Dammam is rapidly becoming a key AI and technology hub in Saudi Arabia, driven by the Vision 2030 initiative and the transformative PIF-Google Cloud partnership. With an expected $71 billion economic impact, this collaboration is set to revolutionise Saudi Arabia's economy, positioning Dammam at the forefront of AI innovation and advanced technology on a global basis.

A major driver of this transformation is Dawiyat, a subsidiary of the Saudi Electricity Company. Dawiyat is expanding fibre-optic infrastructure across the nation, creating a robust digital ecosystem that supports AI, cloud computing, and smart city projects. The company's development of a nationwide smart grid is optimising power distribution and ensuring energy-efficient solutions for the growing AI sector in Dammam, providing the reliable infrastructure that is critical for the development of cutting-edge technologies.

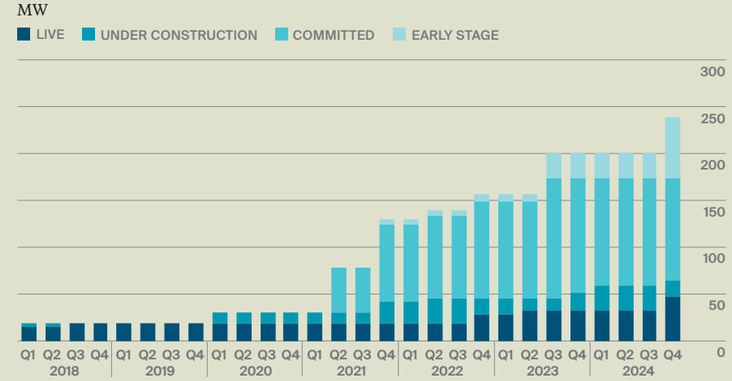
Dammam's strategic location in the Eastern Province is another advantage, making it an ideal destination for businesses, investment, and talent from GCC markets. The partnership with Google Cloud and Dawiyat's infrastructure expansion is expected to generate thousands of jobs across technology, construction, and urban planning.

Bangkok colocation leasing sectors
MW



Sources: Knight Frank, DC Byte

Dammam supply development
MW



Sources: Knight Frank, DC Byte

Insights

Significant transformation is being driven by rapid technological advancements and shifting industry dynamics.

Artificial Intelligence

HARRY HANNAM
SENIOR ANALYST

THE US VS THE WORLD

Knight Frank research forecasts data centre capacity to grow by 46% over the next two years, with the potential to expand by 177% by 2030. The development of artificial intelligence, which has sparked a technological arms race between the United States and China, will drive this growth, alongside the continued deployment of public cloud infrastructure.

The United States leads AI deployment through vigorous innovation, extensive infrastructure investment, and a flexible innovation-first regulatory environment. US companies are aggressively expanding data centres and securing domestic supplies of advanced compute hardware, including GPUs and custom AI accelerators – AI-based data centre capacity volumes have doubled over the course of 2024, as well as Nvidia sales of AI GPUs almost tripling in 2024. This is bolstered by recent government initiatives, such as the CHIPS Act, and efforts to bolster domestic semiconductor manufacturing. Moreover, strategic policy moves, including export controls on AI chips as part of the AI Diffusion framework, reflect a deliberate effort to secure a competitive edge against other global players.

Despite facing U.S. export restrictions – limiting access to the most advanced GPUs like the H100 and B200 – China has emerged as the most formidable competitor to the United States, particularly so following the launch of the AI model DeepSeek, which has raised concerns regarding returns on current and projected AI investment, having been developed at a fraction of the cost of OpenAI's previously market-leading chatbot, ChatGPT.

Europe, however, has taken a more precautionary and regulated approach to AI deployment. The European Union's AI Act, for example, establishes comprehensive rules to manage risk and promote safety. While these measures are intended to build public trust and ensure ethical use, they can also lead to slower deployment cycles compared to the U.S.'s innovation-first model.

AI DIFFUSION FRAMEWORK

Introduced at the onset of 2025, the United States implemented what it named the 'AI Diffusion Framework', a strategic policy designed to regulate the global distribution of advanced AI technologies, including advanced GPUs. The framework introduces a tiering system which acts to regulate who and where advanced AI GPU's can be deployed. Entities wanting unlimited access advanced AI tech must be headquarter in – or be governed by a company based in – the United States. Alongside which, 50% of total deployed AI compute power must be US-based, with no more than 25% of total compute power being based in Tier II registered nations – as an extension, no more than 7% can be based in a single Tier II country.

Tier I involves a grouping of nineteen nations – which features the United States alongside eighteen of its key partners, including the United Kingdom, Japan, and Australia. The majority of APAC – excluding key regions such as Japan, South Korea, and Australia – has been listed under a Tier II status, limiting it to a combined maximum regional deployment of 25% of total global AI deployment volumes – at least deployment volumes based on US-developed hardware. However, a total compute deployment aggregate of 25% in Tier II markets is unlikely to occur, given the dominance of the US and FLAP-D markets in tandem with likely reduced appetite from US hyperscalers to deploy AI overseas. Resultingly, Knight Frank expects 65% to 75% of AI deployment over the next five years to be located within the United States.

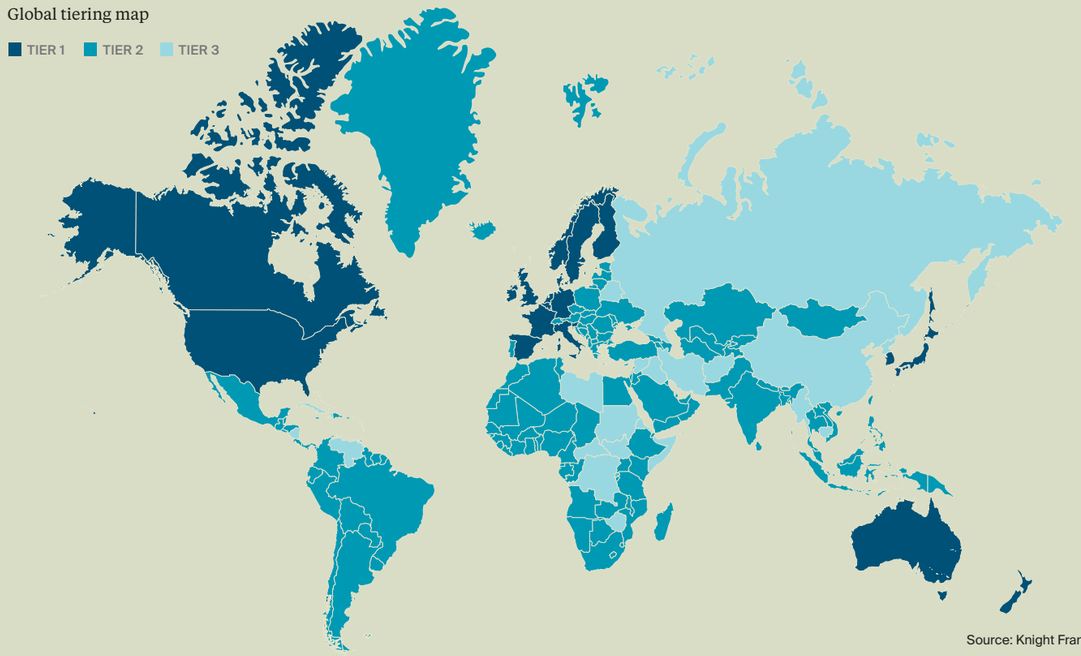
> "The United States leads AI deployment through a combination of vigorous innovation, extensive infrastructure investment, and a flexible innovation-first regulatory environment."

In the short term, this carries an underutilisation risk for projects under development in Tier II countries, where operators may be unable to deploy GPUs to all racks where country thresholds may have been met. Similarly, Giga-scale projects – such with Scala's AI City in Brazil, or Start Campus in Portugal – may be curtailed, with some colocation providers having to reconsider significant AI pipelines in Tier II countries. Similarly, leading LLM's such as GPT-4.5 require sparsity-aware architectures only supported by H100/B200 tensor cores, meaning developers with "H100-free" AI campuses will struggle to secure anchor tenants.

AIP VS STARGATE

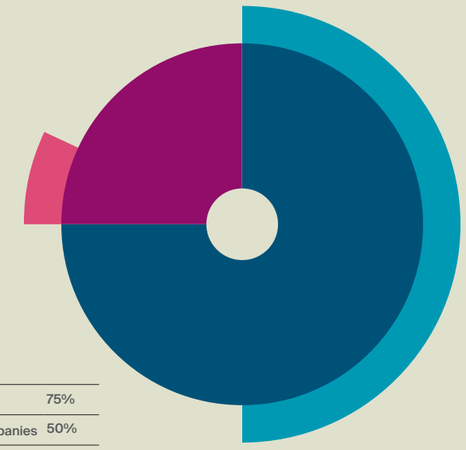
In conjunction with ongoing global trade and economic disputes, a key development is seemingly the growing inter-partnership conflict between the 'AI Infrastructure Partnership' (AIP) group – a $100 billion AI joint-venture involving BlackRock, Nvidia, xAI, MGX Fund Management, GE Vernova, NextEra Energy, and Microsoft – and the STARGATE Project – being developed by OpenAI, SoftBank, and Oracle. With Nvidia and xAI recently joining AIP, this represents a coordinated, full-stack takeover of the AI era, where compute, capital, and clean power are fused into a single strategic advantage – Nvidia brings the compute, BlackRock and MGX unlock capital, while NextEra and GE Vernova solve the energy bottleneck. OpenAI, SoftBank, and Oracle are continuing the development of a $500 billion rival alliance, starting with a 1.2GW campus in Abilene, Texas – 103MW of which will be going live during the first quarter of 2025.

AI diffusion framework
Global tiering map



Source: Knight Frank

UVEU computing power allocation requirements
% of AI deployment volumes



Required Tier 1 countries share	75%
Required US share for US companies	50%
All Tier 2 countries limit	25%
Single Tier 2 country limit	7%

Source: Knight Frank

The real competition is becoming not about who builds the best AI models, but instead about who builds the system that all models must be run on, where a few foundational model providers will dominate the core technologies.

SECTOR REQUIREMENTS

Knight Frank forecasts the global data centre market, which it currently values at $1.4 trillion on a rental basis, to grow at a compound-annual-growth-rate (CAGR) of 18% over the next five years, potentially reaching $4 trillion by the end of the decade. PwC's Global Artificial Intelligence Study projects that AI could contribute up to $15.7 trillion to the global economy by 2030. Notably, the study forecasts a 26% and 14.5% boost in GDP for China and North America, respectively.

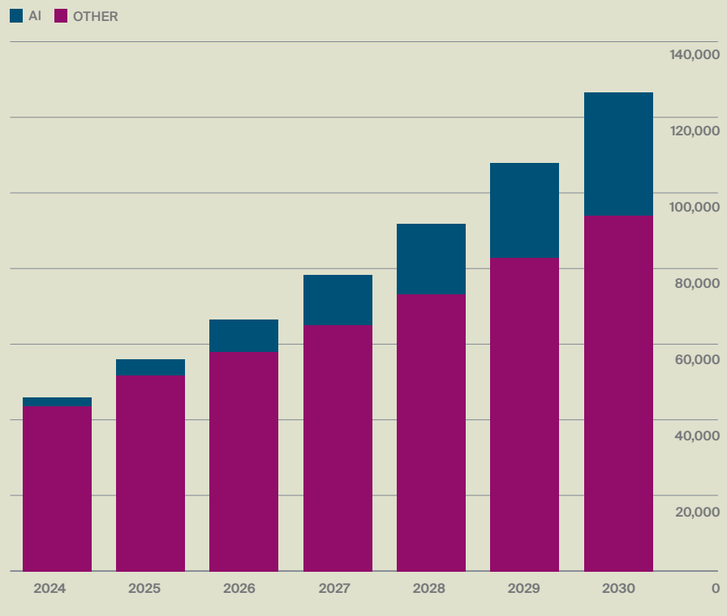
Over the next three years, the data centre market is poised to receive 35GW of new data centre capacity, of which 30% is expected to be dedicated to AI workloads. Realising this AI-based capacity will require approximately $120 billion in capital deployment and a real estate footprint of 120 to 150 million square feet.

RACK DENSITIES

In 2010, the average data centre rack density was between 4-5 kW. By 2020, this had doubled to 8-10 kW. Today, new facility completions are averaging between 12-15 kW, with data centre operators struggling to keep up with ever-rising density demands. Peak demands are now in the 16-20 kW range. Within hyperscale facilities of 10 MW and above, half have deployed cabinets in the 20+ kW range, with almost one in five operating racks above 40 kW.

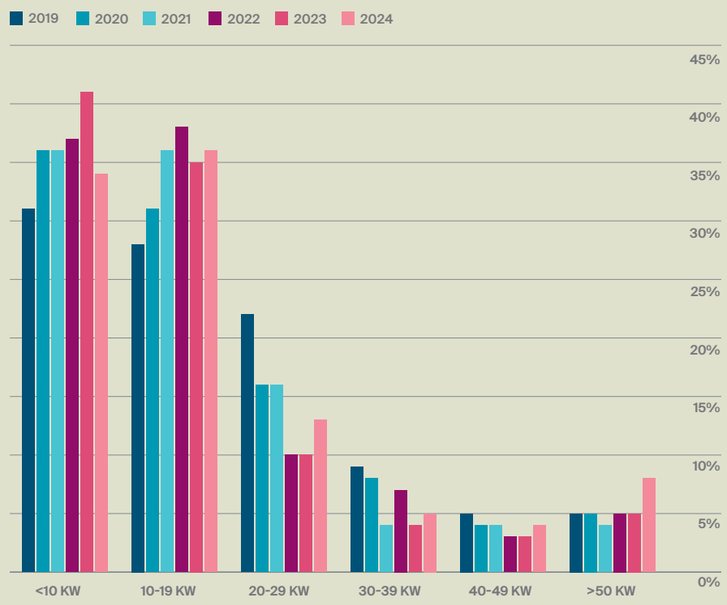
AI applications, particularly those involving large language models (LLMs) and deep learning (DL), demand significantly more computational power. This has led to the development of high-density racks that can support between 60-120+ kW per rack. Nvidia has emerged as the leading provider of AI-dedicated

AI supply growth
Live MW



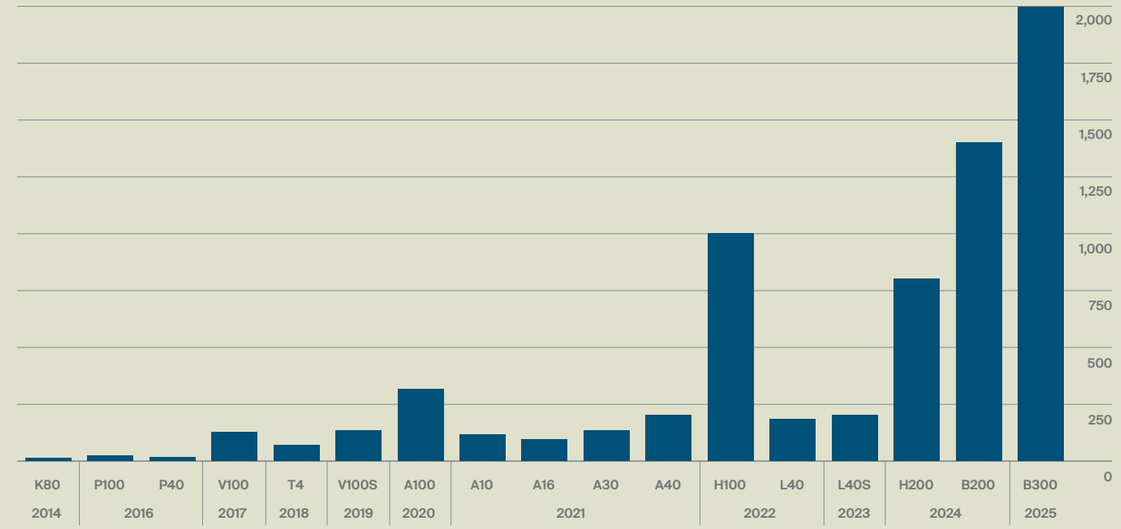
Source: Knight Frank

Highest operable server density



Sources: Knight Frank, Uptime Institute

Nvidia data centre GPU development
FP16 throughput (TFLOPS)



Sources: Knight Frank, Nvidia

GPUs, primarily through its H100 and H200 Hopper-series chips, as well as its new Blackwell-series. H100 and H200 GPU clusters can achieve a power density of 10.2 kW, while B200 GPUs can be clustered to achieve densities of 14.3 kW, representing a 40% power density increase compared to the 2022 Hopper series. To support high-density AI deployments, Nvidia unveiled its liquid-cooled rack design, the GB200 NVL72, capable of running 72 GB200 GPUs and achieving a density of 128.7 kW per rack.

WHAT IS THE OUTLOOK?

Major US technology companies are now devoting unprecedented sums to expand their data centre capacity to support AI workloads. Amazon will be spending $100 billion during 2025, up from $83 billion in 2024, whilst Alphabet (Google) has announced plans to spend $75 billion in 2025, alongside Microsoft which projects spending of close to $80 billion. Meta is also expected to allocate $65 billion for similar purposes. BlackRock, Microsoft, and Abu Dhabi backed MGX have established a $100 billion investment fund, named the AI Infrastructure Partnership (AIP) focussed on enhancing artificial intelligence infrastructure, with advisory support provided by Nvidia.

With the advent of cheaper AI models, such as the Chinese AI chatbot known as DeepSeek, and algorithm optimisation, this has naturally raised questions over current US investment models into AI and implications for data centre capacity demand. Although this may have temporarily startled investors – as witnessed with Nvidia's 17% stock value collapse on 27th January 2025, resulting in the company shedding $589 billion in market capitalisation, the largest single-day value loss of any public company in history – it is important to note the performance of the data centre market is not wholly dictated by the strength of AI GPU developers.

The emergence of cheaper and more efficient models introduces quite a nuanced dynamic for the data centre industry. Whilst innovations may introduce prospects for reduced computational and energy requirements – which could be linked to a reduction in capacity demand for AI data centres – the open-source nature of DeepSeek, combined with reduced development costs, will reduce the high barriers to entry associated with AI development. Lower costs will enable more startups and small-medium-enterprises (SMEs) to deploy custom AI models, accelerating adoption.

Initially, the market may witness some restructuring and recalculation on short-term capacity requirements, potentially resulting in a reduction of large single-customer requirements for Nvidia's hopper-series GPUs – In 2024, Microsoft acquired 485,000 Hopper GPUs, Meta purchased 224,000, ByteDance/Tencent: 230,000, xAI/Tesla: 200,000, Amazon: 196,000, Google: 169,000 – this is likely to be offset by new requirements from startups and SME's. DeepSeek, and the prospect of cheaper AI models, could cause a Jevon's Paradox in the market, where efficiency gains lead to higher overall consumption of a product.

Power

CHRIS JONES
PARTNER, HEAD OF POWER PROCUREMENT & MEP CONSULTANCY

The drive to net zero and the electrification of heating and use of electric vehicles in many countries is causing significant delays in suitable electrical connections for data centre projects. In the UK, this is primarily due to the amount of renewable generation connections currently in the 'queue'.

The current UK queue is c800GW, a significant majority of which is battery energy storage systems (BESS), at c500GW. This is due to historic policy decisions reducing the barriers for generation developers allowing them to apply and maintain their connection applications, by lower application fees and securities. This has led to a surge in speculative applications, with grid connections granted despite no identified land or approved planning permission.

Currently, new demand or generation applications are typically being given 10 to 15 year timescales to connect. An example being the Slough East GSP in West London which is due to be energised in 2037-2038 on current timescales.

The UK government has recognised that these extended timescales are an issue for the sector and are making efforts to reduce these. These efforts include designating Data Centre's as Critical National Infrastructure, and Grid Supply Points as Nationally Significant Infrastructure Projects.

The National Energy Supply Organization (NESO) is currently implementing Connection Reform which is also belatedly addressing this issue. The current proposals are to increase the application barriers by requiring options on land as a minimum and applying contractually binding milestones what would result in contract termination in the event of one being missed.

Connection Reform, which is part of a series of reforms known as TM04, will also introduce a quota system for generation projects for each region of the UK, based upon capacity and technology type. Currently, allocations have been made for 2030 and 2035, with existing generation projects in the UK queue allocated a place based upon their ability to progress with regards to land and planning permission.

Generation projects that do not meet the requirements of the quota system will be removed from the connection queue. It is expected that once connection reform is complete, the current UK connection queue will be reduced to c250GW. With the end of the queue reduced to the early 2030's.

The UK government is being further lobbied to support the acceleration of Data Centre transmission connections as these are not currently prioritised in the application process. This is particularly time critical when considering the need for AI in the next few years.

Knight Frank has suggested and are involved in a number of proposed reforms to allow Data Centre projects to be accelerated. These include the conversion of redundant BESS capacity, which is classed as generation, and has both import and export capacity to demand. Currently a significant amount of the c500GW of BESS capacity in the queue is not needed and could be terminated. Less than 5% of this capacity could be used for a significant amount of the Data Centre demand requirements for the next 5-7 years.

> "The drive to net zero and the electrification of heating and use of electric vehicles in many countries is causing significant delays in suitable electrical connections for Data Centre projects."

Data Centre connections are also being held up by limitations in existing regulations. Currently, demand transmission projects can only connect at 132kV for very large projects to connect, National Grid have to build additional assets to connect customers at 132kV which is sometimes not possible due to land restrictions on existing sites. Connections at 275 or 400kV would alleviate this issue, but this is not currently possible under the current licensing system. The reason for this is historic, as until now, there has not been a need for demand connections above 132kV. However, with sites of 400-500MW becoming common, there is now a need for demand connections at higher voltages.

The issues that the UK is currently experiencing are also becoming an issue in the Europe and the rest of the world. Currently in both Ireland, France, Germany, Spain and Scandinavia connections beyond 2030 are becoming common in Data Centre 'hot spots'. This will be further exacerbated with increased demand for renewable generation connections.

Several governments in Europe are aware of the need for prioritising and accelerating Data Centre Connections.

Ireland has had a current de facto moratorium on Data Centre developments in the greater Dublin area with EirGrid saying it would not accept any applications until 2028 due to a lack of capacity.

Companies have been seeking alternative options within the area – including connections to the country's gas network and running Data Centres off on-site gas power plants. EirGrid, does now allow data centre developers to build their own transmission connections, but this process is governed by strict technical standards and regulatory requirements. Currently a number of developers are building cross country networks connecting generation assets they own on the west coast, to their Data Centres in Dublin.

In France, data centre projects face transmission connection timescales that can vary significantly as in the UK. Generally, the connection process can take several years due to the complexity and scale of the projects. RTE, the French transmission system operator, has proposed a €100 billion plan to upgrade the transmission network by 2040, which includes accommodating up to 5GW of data centres.

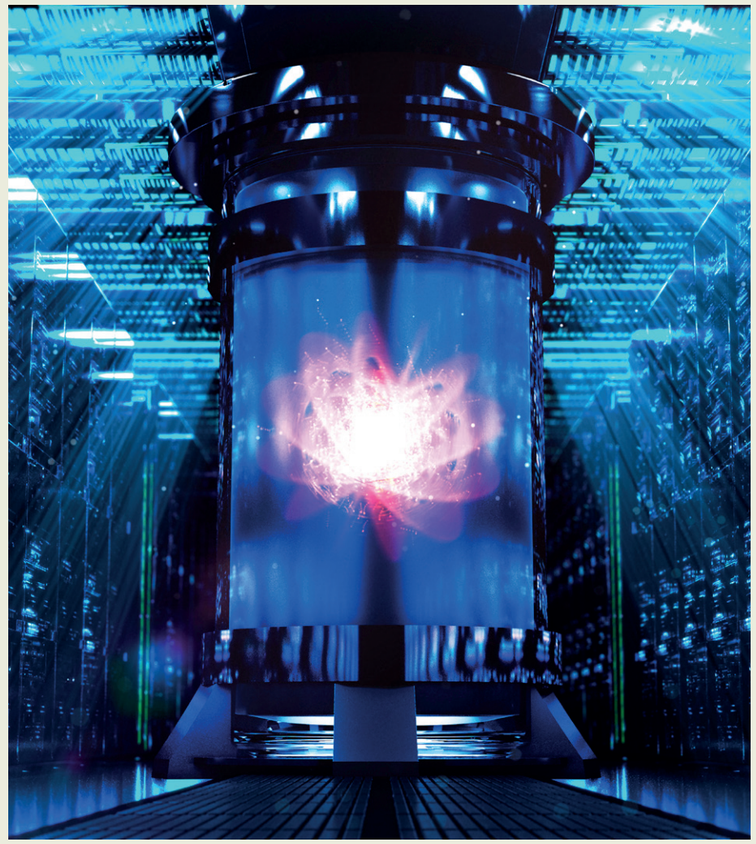
In Germany, the transmission connection timescales for data centre projects can vary significantly across the 4 Transmission Operators. Factors such as location, capacity requirements, and the current state of the transmission network play a crucial role in delivery timescales.

Recent feedback indicate that grid connection requests are increasing, particularly in metropolitan areas like Frankfurt. The Federal Network Agency and the 4 Transmission Operators are working on new procedures to allocate grid connection capacity more efficiently.

In Spain, Portugal and Scandinavia the picture is similar, with connection timescales increasing. Spain and Portugal do allow developers to build their own transmission assets which are subsequently adopted by the transmission operator which can speed up connection dates.

In order to alleviate these delays, there needs to be a partnership approach between central / local government, the National Transmission Operator/s and Data Centre Developers to 'zone' areas for future data Centre development and ensure that the adequate utilities including electrical, and dark fibre capacity are proactively delivered.

> "Knight Frank has suggested and are involved in a number of proposed reforms to allow Data Centre projects to be accelerated. These include the conversion of redundant BESS capacity, which is classed as generation, and has both import and export capacity to demand."



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ESG

JONATHAN HALE
PARTNER, HEAD OF ESG CONSULTING

DECODING THE EU'S GREEN WAVE: HOW OMNIBUS REGULATIONS ARE RESHAPING THE DATA CENTRE LANDSCAPE

The digital age is built on data, and data resides in data centres. But as the world grapples with climate change, the spotlight is firmly on the sustainability of these energy-hungry facilities. The EU's latest "Omnibus" regulatory packages, encompassing CSRD, CSDDD, the EU Taxonomy, and CBAM, are sending shockwaves through the industry, demanding a fundamental shift towards greener operations. For real estate professionals, especially those involved in the data centre sector, understanding these changes is no longer optional – it's crucial.

TRANSPARENCY TRIUMPHS: THE CSRD EFFECT

CSRD is fundamentally changing the landscape of data centre reporting, establishing a new standard of transparency. Gone are the days of generalised sustainability statements. Now, operators must provide granular data on their ESG performance, including energy use, emissions, water consumption, and labour practices. While Omnibus adjustments have altered reporting requirements, the overarching trend toward greater transparency remains. Investors and clients are driving this shift, demanding detailed ESG information and making voluntary reporting a key competitive advantage.

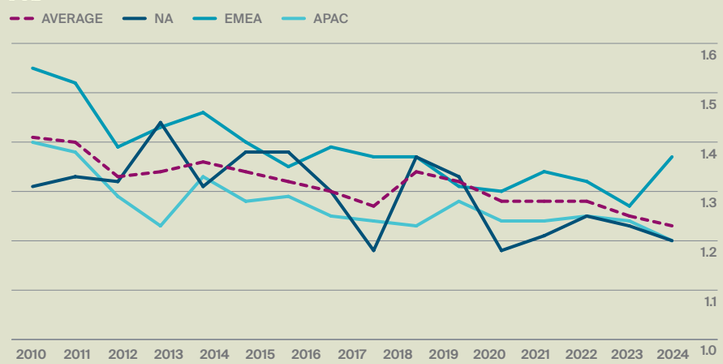
"For real estate professionals, this means understanding how CSRD impacts your data centre assets. Can your clients readily access the necessary data? Are you prepared to advise on ESG reporting strategies? And, do you know your client/user digital emissions footprint?"

ETHICAL SUPPLY CHAINS: CSDDD'S DUE DILIGENCE DEEP DIVE

The Corporate Sustainability Due Diligence Directive (CSDDD) is forcing data centres to examine their supply chains like never before. From server manufacturers to energy providers, every link must be assessed for potential human rights and environmental risks. This means going beyond surface-level checks and delving into the practices of suppliers, ensuring ethical sourcing and responsible operations.

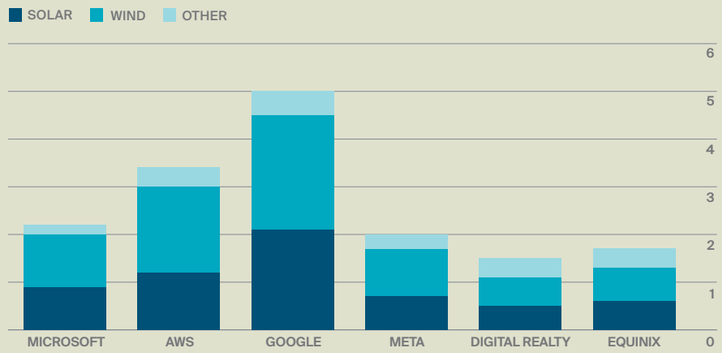
"Are you advising clients on supply chain risk assessments? Can you help them identify and mitigate potential ESG liabilities?"

Design PUE development
PUE



Sources: Knight Frank, DC Byte

Renewable energy procurement
GW



Sources: Knight Frank, Company Financial Records

GREEN INVESTMENTS: NAVIGATING THE EU TAXONOMY MAZE

The EU Taxonomy is the gold standard for sustainable investments. It provides a classification system for environmentally sound economic activities. For data centres seeking green financing, aligning with the Taxonomy is paramount. This means demonstrating significant contributions to climate change mitigation and adaptation, such as utilising renewable energy and implementing cutting-edge energy-efficient technologies. Recent Omnibus updates require close monitoring to ensure continued compliance.

"Are your data centre projects eligible for green financing? Can you help them navigate the complexities of the EU Taxonomy?"

CARBON COSTS: CBAM'S BORDER ADJUSTMENT

The Carbon Border Adjustment Mechanism (CBAM) is a game-changer for data centre equipment sourcing. This mechanism imposes a carbon tax on imported goods, such as servers and cooling systems, based on their embedded emissions. This will push for more local sourcing within the EU, or sourcing from companies with lower carbon footprints.

"How will CBAM impact your clients' procurement strategies? Are you prepared to advise on low-carbon alternatives?"

GLOBAL WARMING: DATA CENTRES AS HEAT PROVIDERS

Beyond regulatory compliance, data centres are becoming active contributors to sustainable heating solutions. Projects in Denmark, the UK, and Finland demonstrate the feasibility of repurposing waste heat for residential use. Microsoft's data centre in Høje-Taastrup, Denmark, aims to heat 6,000 homes, and the UK's Old Park Royal Development Corporation (OPDC) project is aiming to heat over 10,000. Fortum in Finland is working to provide heat to 250,000 heat users. This trend highlights the growing recognition of data centres as potential partners in decarbonising heating infrastructure. The success of these projects is heavily reliant on district heating networks, and heat pump technology.

"There are increasingly opportunities arising to provide waste heat to local heating networks. Are you aware of the funding available for these types of projects?"

THE UK PERSPECTIVE: A GLOBAL PLAYER IN A REGULATED WORLD

Given the global reach of EU standards, UK data centres operating in the global market cannot afford to ignore these EU regulations. International clients and investors often adhere to EU standards, making compliance a competitive advantage. Real estate professionals must stay abreast of these changes to provide accurate and timely guidance to UK data centre operators.

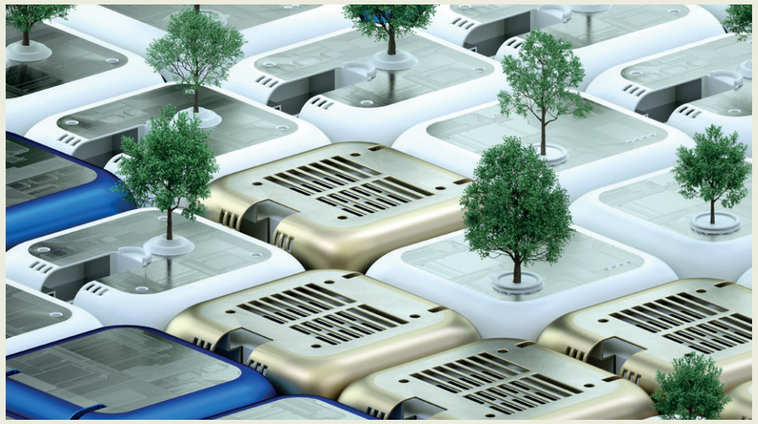
THE COMMERCIAL IMPERATIVE: EMBRACING ESG

For commercial agencies and advisors, the Omnibus regulations present both challenges and opportunities. Those who can provide expert guidance on compliance, ESG integration, and sustainable financing will be in high demand. This is not just about ticking regulatory boxes; it's about building a sustainable and resilient data centre industry.

SIGNPOSTING THE FUTURE:

- **Energy Efficiency is King:** Expect a surge in demand for innovative cooling solutions and energy-efficient infrastructure.
- **Renewable Energy Reigns:** Data centres will increasingly rely on renewable energy sources to reduce their carbon footprint.
- **Data-Driven Sustainability:** Robust data collection and reporting will be essential for demonstrating ESG performance.
- **Supply Chain Scrutiny:** Due diligence will become a core competency for data centre operators.
- **Heat Reuse is the Future:** Data centres will increasingly be considered as a part of the local heating infrastructure.

The EU's Omnibus regulations are driving a fundamental shift towards sustainability in the data centre industry. Real estate professionals who understand these changes and embrace ESG principles will be well-positioned to thrive in this evolving landscape.



Future Tech

DARREN MANSFIELD
PARTNER, HEAD OF DATA CENTRE RESEARCH

In an era where data is often regarded as the “new oil,” technological advancements are driving significant transformation in the data centre sector. As the global digital ecosystem expands, workloads are becoming increasingly complex, placing sustained pressure on the industry with regard to efficiency, scalability, and sustainability. These evolving demands are serving to reshape every aspect of data centre architecture, necessitating innovative solutions across computing power, energy consumption, and cooling technologies. In short, data centres are not only critical to powering the advancing technologies of the world but also are the subject of continuous innovation in their own right.

“In an era where data is often regarded as the “new oil,” technological advancements are driving significant transformation in the data centre sector.”

AI-POWERED EVOLUTION: HOW ARTIFICIAL INTELLIGENCE IS RESHAPING DATA CENTRES

Today, artificial intelligence is a significant driver behind the rapid evolution of data centres. The proliferation of deep learning models and large-scale AI workloads has significantly increased demand for high-performance computing, resulting in a growing number of data centres optimised explicitly for AI. As applications in automation, predictive analytics, and generative technologies continue to scale, data centres are needing to adapt quickly to meet these escalating computational requirements.

Foremost, the accelerated growth of AI has heightened energy consumption, driving the need for sophisticated cooling and power solutions to ensure sustainability. Interestingly, data centres are increasingly adopting AI-driven energy management systems to address this, enabling more efficient power usage and reducing environmental impact.

CLOUD'S NEW FRONTIER: THE RISE OF HYPERSCALE AND EDGE COMPUTING

The widespread adoption of cloud computing has significantly altered the data centre landscape in recent years. Cloud platforms enable scalable, on-demand computing, reducing reliance on traditional, large-scale, on-premises infrastructure, a shift that has decreased demand for conventional colocation space while accelerating advancements in hyperscale data centres optimised for efficient cloud support.

Edge computing is emerging as a pivotal extension of cloud infrastructure, addressing latency challenges by processing data closer to source and end users. Applications such as autonomous vehicles, smart cities, and industrial IoT rely on edge computing for real-time responsiveness. This trend is driving investment in micro data centres and decentralised infrastructure, enabling faster data processing.

“Data centres are increasingly adopting AI-driven energy management systems to address this, enabling more efficient power usage and reducing environmental impact.”

QUANTUM COMPUTING: A NEW PARADIGM FOR DATA CENTRES

Quantum computing represents the next groundbreaking leap in computational capabilities with significant implications for data centres. Unlike traditional computing, which operates on binary bits, quantum computers utilise qubits to perform complex calculations at unprecedented speeds. This advancement holds transformative potential for cryptography, AI, and industry optimisation tasks.

For data centres, quantum computing presents both opportunities and challenges. The sheer processing power of quantum systems may reduce the reliance on conventional computing infrastructure, necessitating a shift towards quantum-ready environments. This transition requires further advancements in cooling solutions to maintain the extreme conditions needed for quantum coherence. Quantum technology is poised to disrupt encryption standards, compelling data centres and data centre customers to adopt security measures to counter potential quantum-based cyber threats.

While quantum computing is still in its early stages, continuous research and development suggest it will become a crucial component of high-performance computing. As adoption expands, data centres must integrate quantum-compatible infrastructure, reshaping computational models and data security paradigms.

> "Traditional energy sources are proving insufficient for the massive workloads AI-driven data centres require, leading to innovative alternatives."

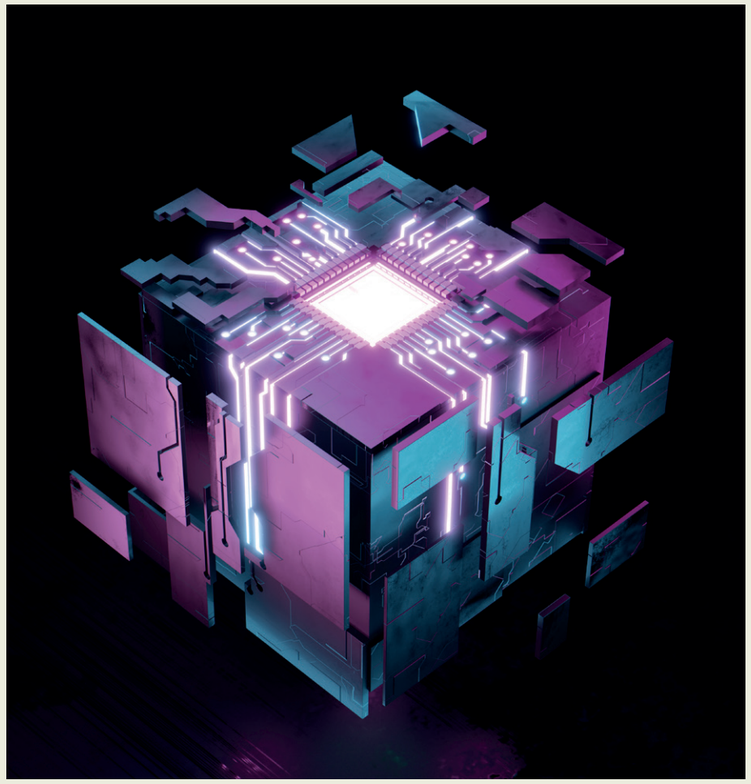
To meet the evolving demands of today and the future, data centres are undergoing a fundamental transformation in infrastructure design, with a strong emphasis on efficiency, sustainability, and performance.

COOLING THE FUTURE: NEXT-GEN INNOVATIONS IN DATA CENTRE EFFICIENCY

Data centres are adopting cutting-edge cooling technologies as high-performance workloads generate increasing heat loads. Chip-level liquid cooling is gaining prominence as an energy-efficient solution. Microsoft's latest data centre design, unveiled in August 2024, exemplifies this shift by leveraging liquid cooling to optimise AI workloads while eliminating water consumption for cooling.

In response to growing environmental concerns, data centres are also adopting advanced waterless cooling technologies to enhance efficiency and sustainability. For example, the newly deployed Edged Data Centers facility in Kansas City utilises an innovative waterless cooling system explicitly designed for AI-intensive workloads. This approach optimises energy efficiency and mitigates the challenges associated with water consumption in high-performance computing environments.

Another emerging solution is immersive cooling, which involves submerging entire servers in dielectric fluid. Immersion cooling has the benefit of increasing the return water temperature compared to traditional air cooling potentially up to 50 deg C. This significantly increases the 'free cooling' envelope, allowing compressor



free cooling all year and significant improvement in instantaneous and annualised PUE's. It is particularly well-suited for AI, blockchain, and other compute-intensive applications where traditional air- or water-based cooling methods often prove insufficient. As data processing demands grow, such advancements play a crucial role in enhancing modern data centres' sustainability and operational performance.

POWERING THE FUTURE: INNOVATIONS RESHAPING ENERGY INFRASTRUCTURE

As the demand for computing power surges – driven by AI, cloud computing, and digital services – data centre operators are turning to next-generation energy solutions to secure reliable, scalable, and sustainable power. Traditional energy sources are proving insufficient for the massive workloads AI-driven data centres require, leading to innovative alternatives.

SMALL MODULAR REACTORS (SMRS) – THE FUTURE OF NUCLEAR ENERGY

Small Modular Reactors (SMRs) are emerging as a scalable, carbon-free power source for high-density data centres. Unlike traditional nuclear plants, SMRs offer lower costs, enhanced safety, and faster deployment. Companies like Google, Amazon Web Services (AWS), and Oracle are already exploring SMRs to meet their growing energy needs. With the potential to deliver continuous, high-capacity power, SMRs could significantly reduce the industry's reliance on fossil fuels.

AI-OPTIMISED LOAD SHIFTING & DEMAND RESPONSE

Artificial intelligence is transforming how data centres manage and distribute power. AI-powered systems can predict energy demand, shift workloads dynamically, and optimise power consumption across multiple locations. Google's DeepMind AI has already reduced cooling power usage by 40%, while Microsoft is leveraging AI to manage energy distribution efficiently. As AI adoption increases, these intelligent systems will help minimise grid stress and improve energy efficiency.

HYDROGEN FUEL CELLS FOR CLEAN BACKUP AND PRIMARY POWER

Hydrogen fuel cells are emerging as a sustainable alternative to diesel generators. Unlike fossil fuel-based backups, hydrogen fuel cells produce benign or zero emissions and can provide backup and primary power for data centres. Microsoft successfully tested a 3MW hydrogen fuel cell system in 2022, paving the way for large-scale deployment. However, the transition to hydrogen faces challenges, including the infancy of standards like the UK's "Low Carbon Hydrogen Standard," making cost predictions difficult. Additionally, adopting hydrogen-based systems requires increased capital expenditure and space compared to traditional diesel generators. Nonetheless, as green hydrogen production scales up, this technology could play a critical role in making data centres more environmentally friendly.

GRID-INDEPENDENT MICROGRIDS & ENERGY ISLANDS

Data centres are exploring microgrids – self-sufficient power networks combining renewable energy, battery storage, and AI-driven energy management to ensure energy resilience and reduce dependency on national grids. Companies like Tesla are developing microgrid solutions integrating solar and wind power with advanced energy storage systems. Microgrids can provide uninterrupted power and greater energy autonomy by reducing reliance on unstable grids.

> "Data centres are exploring microgrids – self-sufficient power networks combining renewable energy, battery storage, and AI-driven energy management to ensure energy resilience and reduce dependency on national grids."

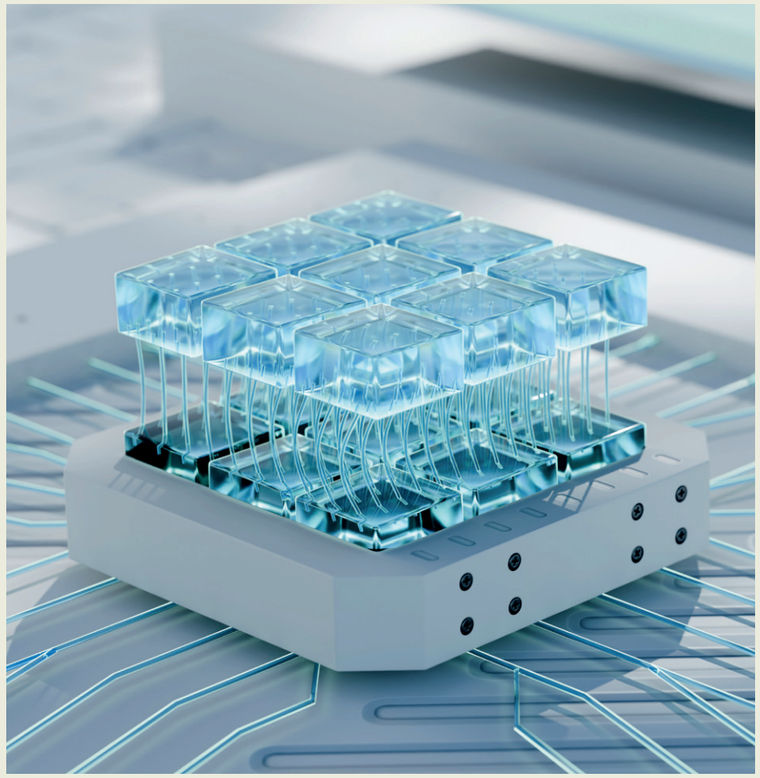
FUSION ENERGY – THE LONG-TERM VISION?

While still in the early stages, fusion energy has the potential to revolutionise power generation. Unlike traditional nuclear reactors, fusion produces no radioactive waste and offers an inexhaustible, clean energy source. Tech giants like Amazon and Microsoft have invested in fusion startups, betting that commercial fusion reactors could provide limitless energy within the next 10-15 years.

CONCLUSION

The accelerating pace of advancements in AI, cloud computing, quantum computing, and infrastructure innovation are redefining the future of data centres. As the demand for high-performance computing accelerates, data centres will be required to adopt next-generation cooling, power management, and connectivity solutions to enhance efficiency while ensuring environmental sustainability.

Looking ahead, the integration of AI-driven automation, edge computing, and advanced energy solutions will drive unprecedented growth, transforming data centres into highly scalable, intelligent, and resilient digital hubs. As AI, automation, and quantum computing continue to push the boundaries of digital infrastructure, cutting-edge networking and energy-efficient technologies will be essential in shaping the next generation of ultra-reliable, high-performance data centres – solidifying their role as the backbone of the global digital economy.



Global Capacity Outlook

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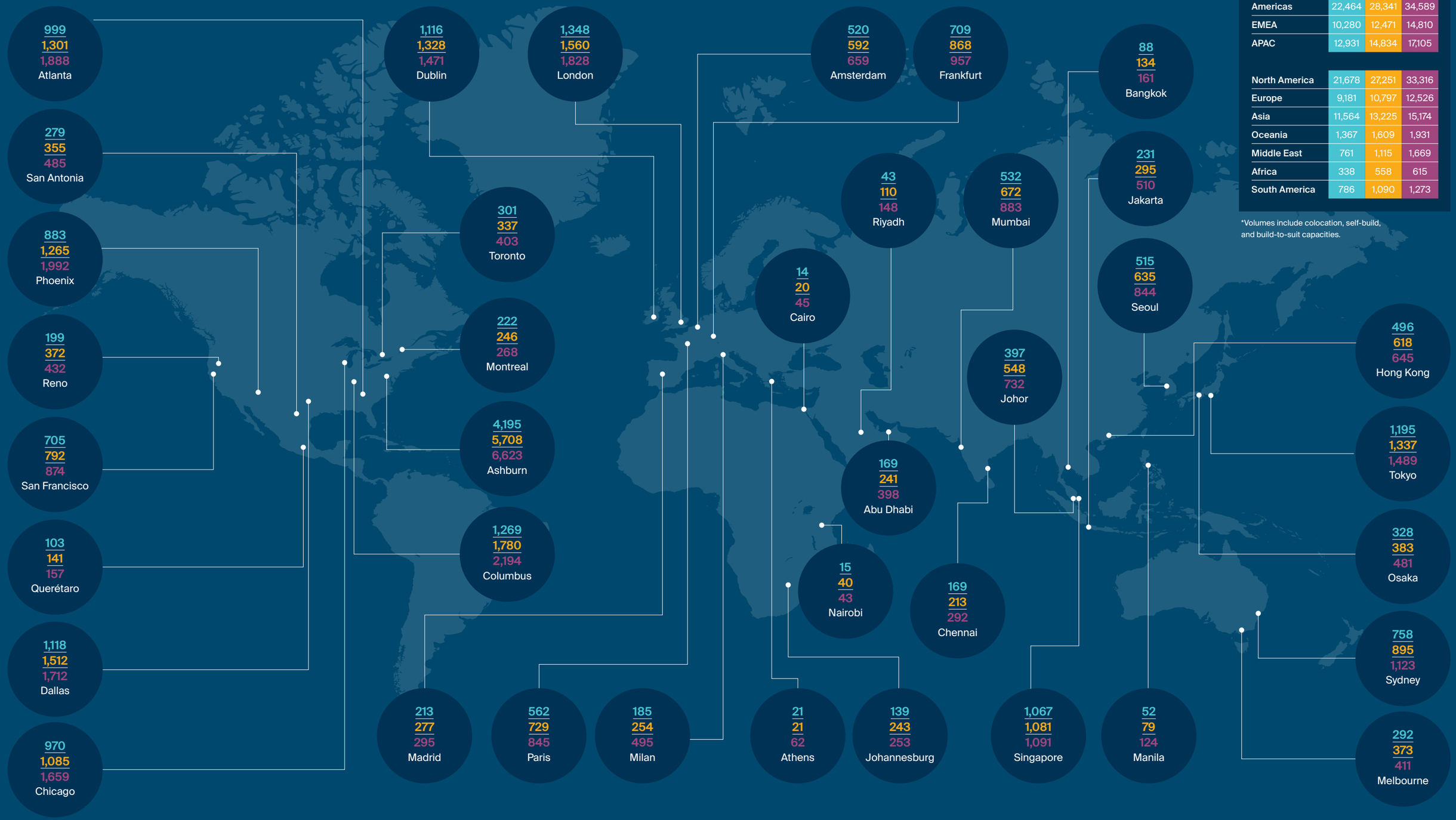
Global Forecasts

Live IT Capacity (MW)



	2024	2025	2026
Global	45,676	55,646	66,504
Americas	22,464	28,341	34,589
EMEA	10,280	12,471	14,810
APAC	12,931	14,834	17,105
North America	21,678	27,251	33,316
Europe	9,181	10,797	12,526
Asia	11,564	13,225	15,174
Oceania	1,367	1,609	1,931
Middle East	761	1,115	1,669
Africa	338	558	615
South America	786	1,090	1,273

*Volumes include colocation, self-build, and build-to-suit capacities.

About us

Our Service Lines

VALUATION

Dedicated Data Centre Valuation team service and advice to operators, landowners, major institutional investment houses and real estate companies across EMEA and APAC.

Valuation resources available in all the major and emerging markets, working closely with our international occupier and capital markets team's platforms.

DEVELOPMENT

The Data Centre Development team have the benefit of utilising the firm's unrivalled global industrial and land advisory network.

The Development team have built a market leading site sourcing application, acquiring and disposing of data centre development sites on behalf of Landlords and Operators/ Cloud providers, respectively.

INVESTMENT

The Data Centre Investment team also benefit from Knight Frank's Capital Markets network.

The team focuses on working with institutional investment houses, private equity and private landlords in acquiring and disposing rentalised Data Centre assets and portfolios as well as acquiring and disposing existing operational platforms.

OCCUPIER

The Occupier Advisory team provide colocation acquisition and renewal services across the world.

The team have extensive global expertise representing clients in 56 countries acquiring over 180 MW of IT capacity and as a result hold strong relationships with major operators in Tier 1 and emerging markets.

INSIGHT

The Knight Frank Insight team offer global industry leading data centre research.

The team collect detailed statistics and create forecasts with analysis covering global major and emerging markets.

Knight Frank is a trusted consultancy partner producing bespoke due diligence and market reports for major investors, lenders and developers.

Our People

Stephen Beard
Global Head of Data Centres
Development & Investment
stephen.beard@me.knightfrank.com

APAC

Fred Fitzalan Howard
Head of Data Centres, APAC
fred.fitzalanhoward@asia.knightfrank.com

Jiya Agrawal
Analyst, APAC
jiya.agrawal@asia.knightfrank.com

Americas

Jason Shepherd
Managing Principal, Cresa MCS
jasonshepard@cresa.com

MENA

Savana Assaf-Booth
Surveyor
savana.booth@me.knightfrank.com

Si Lau
Surveyor
si.lau@me.knightfrank.com

Valuation

Alex Burgoyne
Global Head of Data Centres Valuations
alex.burgoyne@knightfrank.com

Agne Berzinskaite
Associate
agne.berzinskaite@knightfrank.com

Isobel Green
Senior Surveyor
isobel.green@knightfrank.com

Jamie Hall
Surveyor
jamie.hall@knightfrank.com

Amanda Luo
Analyst
amanda.luo@knightfrank.com

OCCUPIER SERVICES

Celeste McGinley
Senior Surveyor
celeste.mcginley@knightfrank.com

Power & MEP Consultancy

Christopher Jones
Head of Power Procurement & MEP Consultancy
chris.jones@knightfrank.com

Development & Investment

Oscar Matthews
Partner
oscar.matthews@knightfrank.com

Oliver Weston
Associate
oliver.weston@knightfrank.com

Olamide Emiloju
Surveyor
olamide.emiloju@knightfrank.com

Insight

Darren Mansfield
Head of Data Centre Insight
darren.mansfield@knightfrank.com

Harry Hannam
Senior Analyst
harry.hannam@knightfrank.com

Ruth Hick
Executive Assistant
ruth.hick@knightfrank.com

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Our global network

740+ OFFICES

OVER 50 TERRITORIES
27,000+ PEOPLE
1 GLOBAL NETWORK

To work responsibly, in partnership, to enhance people's lives and environments.

The Americas
4 Markets

Bahamas | Barbados | Canada
United States of America

237 OFFICES
11,500+ PEOPLE

United Kingdom
4 Markets

England | Scotland
Wales | Jersey

71 OFFICES
2,800+ PEOPLE

Europe
22 Markets

Austria | Belgium | Bulgaria
Czech Republic | Denmark | Finland
France | Germany | Greece | Hungary
Iceland | Ireland | Italy | Monaco
Netherlands | Poland | Portugal
Romania | Serbia | Spain | Sweden
Switzerland

106 OFFICES
1,110+ PEOPLE

Asia Pacific
16 Markets

Australia | Cambodia | Chinese Mainland | Fiji
Hong Kong SAR | India | Indonesia | Japan
Malaysia | New Zealand | Philippines | Singapore
South Korea | Taiwan | Thailand | Vietnam

299 OFFICES
11,000+ PEOPLE

Africa
11 Markets

Botswana | Egypt | Kenya | Malawi
Morocco | Nigeria | South Africa | Tanzania
Uganda | Zambia | Zimbabwe

22 OFFICES
630+ PEOPLE

The Middle East
4 Markets

Bahrain | Qatar
Kingdom of Saudi Arabia
United Arab Emirates

7 OFFICES
330+ PEOPLE