

Data centers powering through volatility

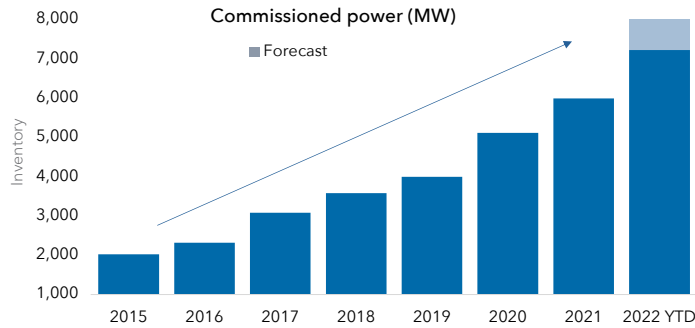
Data centers prove to be mission critical

Following more than two years of pandemic-related disruptions around the world, digital infrastructure has proven to be mission critical to most business, and data centers have emerged as an even more important and larger commercial real estate asset class. With evolving technologies such as 5G, AI and edge computing adding to an already high demand for data centers, the sector continues to grow.

A rapidly expanding data center market

The United States is the largest data center market in the world, and the growth of this market has been impressive.¹ During the past decade, inventory across the U.S. markets has expanded nearly fourfold. Total capacity has grown 15 percent per year during the past five years, as the market continues to scale up to meet demand.

Figure 1: Inventory growth continues at a rapid rate

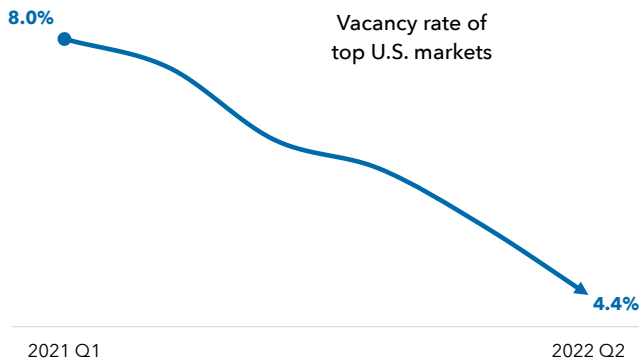


Source: DataCenterHawk, Q2 2022

After more than two years of unprecedented growth, capacity is extremely limited

Since the onset of the pandemic, what was already strong data center demand has been propelled further with two years of record-setting absorption. In the top U.S. markets, absorption in 2020 and 2021 surpassed the addition of commissioned power by 38.7 megawatts (MW) and 82.2 MW, respectively.¹ This supply and demand imbalance has driven vacancy rates down by more than 300 basis points to a historic low.

Figure 2: Vacancy across major markets at an all-time low

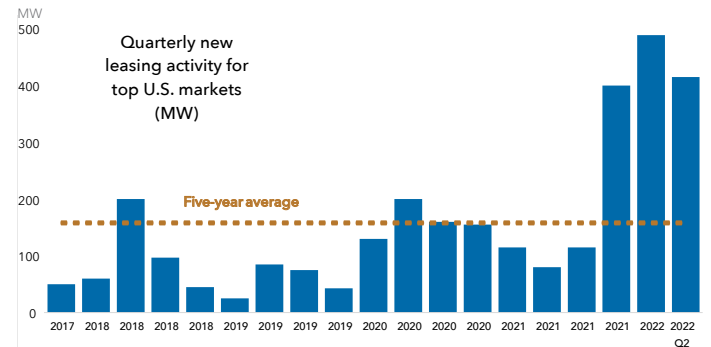


Top U.S. markets: Chicago, Dallas, New Jersey/New York, Northern California, Northern Virginia, Phoenix. Source: DataCenterHawk, Q2 2022

Tight market conditions pressured by record-setting leasing activity

Among the top U.S. markets, historic levels of new leasing activity are creating challenges for users and operators in an environment already struggling with tight supply conditions. Leasing activity has been led by Northern Virginia, the world's largest data center market, where record-setting absorption pushed vacancy below 2 percent and even future availability is extremely limited, as speculative construction sits near historic lows.

Figure 3: Leasing activity continues at historic pace



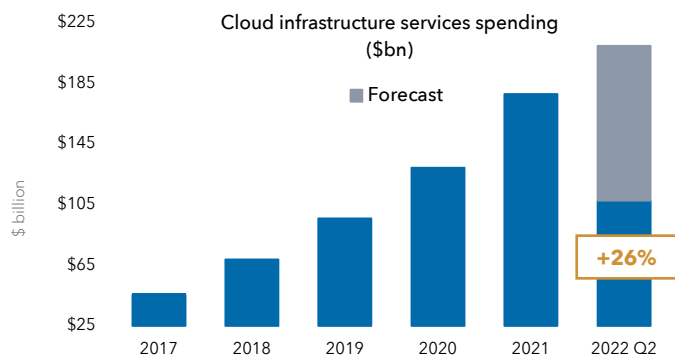
Source: DataCenterHawk, Q2 2022

Exponential growth in cloud spending a key driver of future data center demand

Data has been one of the fastest-growing commodities in the world, and it is showing no signs of slowing down. Global enterprise cloud spending in the second quarter of 2022 grew by 26 percent year-over-year², continuing to drive hyperscale data center deployment, as the industry is rapidly shifting from enterprises owning and operating their own data centers to outsourcing that function to public cloud providers and colocation operators. Amazon Web Services (AWS), Google and Microsoft control an estimated 65 percent of the cloud market and have been among the largest consumers of data center space.

The cloud ecosystem is expected to grow by 10 percent to 30 percent every year from 2022 to 2027³, as leading technology firms' commitment to digital transformation remains a priority. Google and AWS recently indicated they plan to shift resources toward developing cloud infrastructure, even as they cut back in other areas.

This surge in cloud infrastructure has led to a shift within the real estate industry to accommodate larger lease sizes. In the U.S. market in 2017, there were no leases recorded greater than 25 MW. By 2021, there were 11 leases recorded greater than 30 MW.³ This trend leaves limited options for the uptick in enterprise users looking for smaller requirements of 1 MW to 4 MW. The combined demand has increased pricing for both first- and second-generation space and pushed tenants beyond the supply-constrained primary markets into secondary markets.

Figure 4: Surge in cloud-infrastructure services spending

Source: Synergy Research, June 2022

Limited available capacity, combined with growth in cloud usage, continues to intensify demand and has created a sense of urgency among top tenants to secure space. While new supply under way is at historic levels, the increased requirement sizes and lack of suitable options to meet the demand from the hyperscale sector will keep the supply and demand imbalanced for the foreseeable future.

Increasing investment activity

Data centers are still commonly viewed as a niche real estate asset class, but as the market increases in size and proves the strength and sustainability of demand, real estate investment across the globe has been increasingly attracted to the sector.

In 2021, data center transactions reached nearly \$8.2 billion.⁴ In the 10 years through 2021, global data center sales grew at a compound annual rate of 15 percent, which translates to fifth across major real estate property sectors, and close behind the growth in residential and industrial sectors. Given its scale, the United States accounts for a significant portion of transaction activity, at 50 percent of all data center deals, but other global markets are gaining share, as those markets expand and provide more opportunities for investors to transact.

Multiple large merger and acquisition transactions in 2021 further demonstrate investor interest in the industry, such as KKR's and Global Infrastructure Partners' (GIP) \$15 billion acquisition of CyrusOne and American Tower's \$10 billion acquisition of CoreSite. This activity has continued with deals

exceeding \$24 billion through the first half of 2022, on track with 2021 levels.

As investment in the data center sector grows, transparency and liquidity are improving, and the opportunity set is growing.

KEY ISSUES AHEAD

Sustainability will continue to be a key focus for the sector

Meeting the challenges of building a more sustainable world will be a key focus within the data center sector for the foreseeable future. Collectively, these spaces in the U.S. account for approximately 2 percent of the total U.S. electricity use.⁵ The pressure to reduce carbon emissions will become more challenging to solve within existing and future sites, especially as development restrictions have been focused on energy consumption. The industry has been proactively working toward sustainable operations, and tenants are moving toward designs that prioritize efficient energy and water use.

Pressure on new supply

The rapid acceleration of demand for data centers has highlighted the need for new supply. Asking rents are trending upward as inventory remains tight, and existing construction projects are largely preleased. Heightened demand combined with concerns for power availability have made developable sites extremely limited, and inventory growth may slow amid these challenging conditions.

Investment outlook

The secular demand story surrounding data center real estate is still in the early innings. Data centers have become a critical part of society's infrastructure and will continue to grow in importance, even as the sector is navigating a more complex environment. Tenants continue to invest heavily in digital transformation, and the tight fundamentals are a clear reflection of the durability of the data center sector across economic cycles.

The long-term opportunity for investors remains attractive as the world's data needs continue to grow exponentially, limited only by power and land availability to scale further.

Notes:

¹ DataCenterHawk, 2Q 2022 Data Center Market Recap; ² Synergy Research Group, Public Cloud Ecosystem Quarterly Revenues Leap 26% to \$126 Billion in Q1, June 22, 2022; ³ JLL, Data Center Outlook H1 2022; ⁴ RCA Q1 2022 Big Picture, transaction volume of completed-assets, assets excluding development sites; ⁵ U.S. Department of Energy, Energy.gov, Data Centers and Servers, Retrieved August 2022

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