

DATA CENTERS STAGE CENTER



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Data center investments have proven resilient in periods of economic volatility—and they're only going to become more essential and important into the future.

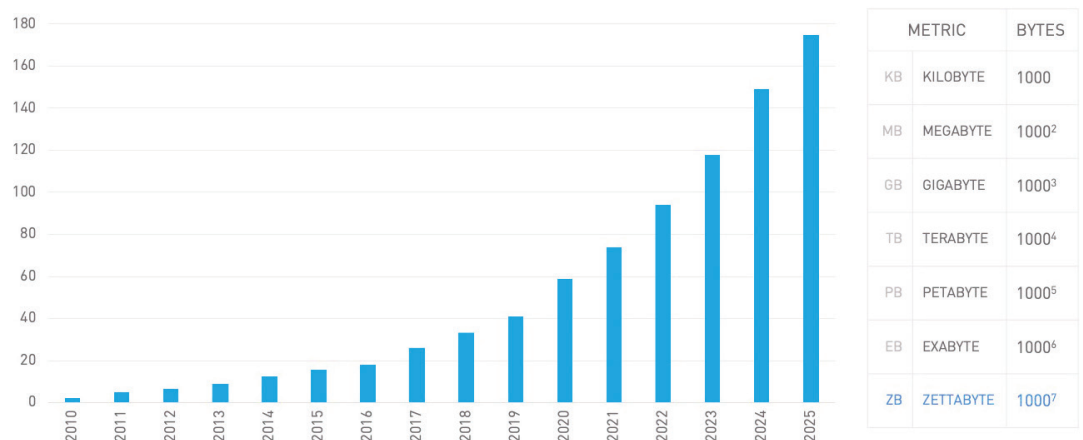
Once viewed as a niche real estate investment, data centers have risen in popularity as the need for data storage and processing has rocketed in parallel with the amount of data consumed by individuals, businesses, and new technologies.¹ While pandemic-related social restrictions have accelerated data usage trends, data centers have long been vital to the global economy's reliance on connectivity. With an attractive risk/return profile and significant barriers to entry, the industry has proven itself resilient in both good and bad economies, making high-quality data centers an increasingly attractive opportunity for real estate investors.

It is no secret that our modern lives revolve around data. In the US and Europe, the average home has ten or more internet-connected devices—a number expected to double in the next two years as the Internet of Things (IoT) and disruptive technologies such as artificial intelligence (AI) become more prevalent. The global volume of daily data production is expected to reach 175 zettabytes (ZB) in 2025 (*see Exhibit 1*); nearly three times what it is today.² To put this in perspective, one ZB represents one trillion gigabytes (GBs). Storing 175 ZB on DVDs would require a stack of discs that would circle Earth 222 times.³

As the world grows increasingly interconnected, the demand for data requires more storage solutions and robust processing power. While in the past the primary purpose of data centers was to simply store data, today computing power and network connectivity have become the most important purpose for these facilities. Data centers have become the cornerstone of the information economy.

EXHIBIT 1: WORLDWIDE VOLUME OF DATA (ZETTABYTES)

Source: IDC, 2018



DEMAND DRIVERS FOR DATA CONSUMPTION

The exploding demand for data is coming from three main categories of users: consumers, businesses, and emerging technologies.

As consumers, we are well aware of our reliance on data-dependent activity, whether we are messaging friends, ordering dinner, or watching a video on our phones. And the world is only going to get more dependent on data connectivity. By 2023, the number of global internet users is expected to soar to 5.3 billion—roughly two-thirds of the world’s population—up from 3.9 billion in 2018.⁴ In addition to expanding access to social media and e-commerce, this connectivity will continue to allow consumers to move from a world of physical media (e.g., disks, print, and broadcast content) to on-demand services such as streaming music, movies, games, and more. And as the IoT becomes more ingrained in our lives, consumers will use even more data-intensive devices.

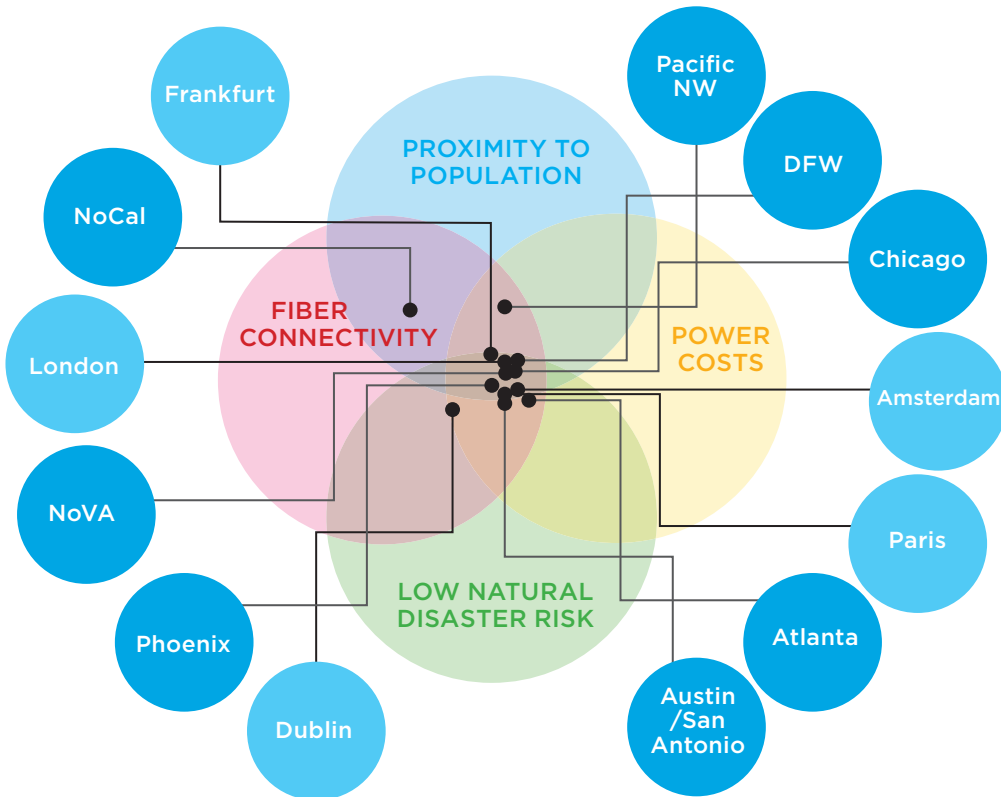
Businesses continue to migrate their activities online to improve efficiencies. At the same time, many are using predictive analytics or other data science tools to improve customer experiences and provide competitive advantages. An increasing number of companies are digitizing consumer activity to help them better understand and align their products and services with the needs of their customers. Ultimately, most companies will need to adapt to a world in which they need to leverage data to make business decisions.

Technological advances are increasing the demand for low-latency and high-bandwidth data, driving the need to have computing power placed in close location to end users. As AI and virtual reality expand and continue to be applied to new applications, their data-intensive nature will require a higher level of processing power. Further down the road, other data-intensive technologies necessary for the expansion of edge computing (that is, a computing paradigm that stresses geographical proximity to high-demand usage locations) and autonomous vehicles and facilitated by 5G will also require a significant amount of low-latency connectivity.



EXHIBIT 2: DATA CENTER ATTRIBUTES (LOCATION)

Source: Principal Global Investors research and views and not a forecast or guarantee of future events; November 2020



PROCESSING AND STORING THE WORLD'S DATA

Data center tenants can be classified generally as enterprises, collocation providers, or cloud service providers. Enterprise tenants tend to be Fortune 100 companies with the resources to support their own dedicated facility. While these large companies may outsource certain data infrastructure needs, they often have proprietary and mission critical systems that cannot be easily outsourced and require the security of their own dedicated facility.

Collocation providers are tenants that share a data center because of the economic efficiencies provided by the asset—similar to a coworking facility. Collocation providers also enable users to access a high-quality data center without having to make large capital investments. These users are generally small-to-medium businesses, or large enterprises that may need a satellite location for redundancy or disaster recovery purposes.

A cloud service provider allows its customers to convert physical technology assets into a subscription service. For these tenants, migrating data to the cloud creates a scalable platform with operating expenses more closely in line with utilization. The fastest growing segment of data center users are “hyperscale” tenants, the largest of the cloud service providers (e.g., Amazon Web Services, Microsoft, Google), which generate significant economies of scale and provide an attractive alternative to a traditional enterprise facility.

A data center is built to store and process the data of its tenant in the most secure way possible, while providing maximum uptime. As a result, redundancy is built into every component, and there are typically multiple sources of power as well as backup power systems. In addition to the security of the facility, tenants consider many other factors, such as access to fiber connectivity, operational costs, and a low susceptibility to natural disasters. The proximity of the facility to the population it serves is becoming increasingly important, because latency—the time it takes to request, process, and return data—is becoming more problematic and disruptive as businesses and individuals rely on applications loading quickly. No one wants to see the dreaded “buffering” notification.

SECULAR TRENDS SUPPORT THE “NEW NORMAL”

The impact of COVID-19 on the use of data has been monumental. Daily Zoom meeting participants were 10 million in December 2019, and in March 2020, this number ballooned to more than 200 million.⁵ In first quarter of 2020, Netflix added 16 million new customers, closing out the year with more than 200 million subscribers.⁶ The use of social media, streaming services, and online sales have all accelerated, making the processing and storing of this huge volume of data even more critical to the global economy.

However, data consumption had already been rapidly accelerating prior to COVID-19, with the volume of worldwide data doubling every two to three years. The combination of the secular trend in data consumption, alongside the “new normal” created by the pandemic, has created a confluence of factors that make data centers increasingly appealing investments.

One of the most important factors is the stickiness of data center tenants. Because of the significant tenant investment, as well as the difficulties of relocating data infrastructure, larger tenants tend to prefer long leases—typically in excess of ten years. What this means for investors is that these assets provide access to longer-term, growing income streams—typically from high-quality credit tenants.

In addition, several barriers to entry exist for new entrants into this space. These include the significant amount of capital and knowledge needed to build and manage a data center, as well as the difficulty in finding ideal locations with the confluence of a buildable site and the fiber and power infrastructure. These barriers create high costs for new entrants, constraining supply and creating more intrinsic value for existing data centers.

Taken together, these structural aspects of data centers can help drive attractive returns while also making them a strong portfolio diversifier, especially in light of elevated correlations among other asset classes.



A GLOBAL GROWTH OPPORTUNITY

Data center investments have both growth and defensive attributes and have proven resilient in periods of economic growth and in economic downturns (*see Exhibit 3*). The industry will continue to institutionalize as real estate ownership continues to be bifurcated from the data center operations and third-party service providers enhance their offerings within the sector. For traditional real estate investors, these characteristics—along with an attractive risk/return profile—present a compelling opportunity.

The data center industry does face its share of challenges, particularly where there are power constraints and strict zoning laws that can make sourcing projects more difficult and limit the scope of investment opportunities. However, the network of data facilities that underpin the global economy is presenting investors a unique opportunity to gain exposure to one of the most critical components of the information economy. Regardless of whether or not we are entering a new normal in how we live and work, it is clear data centers are becoming a progressively important part of our everyday lives.

ABOUT THE AUTHOR

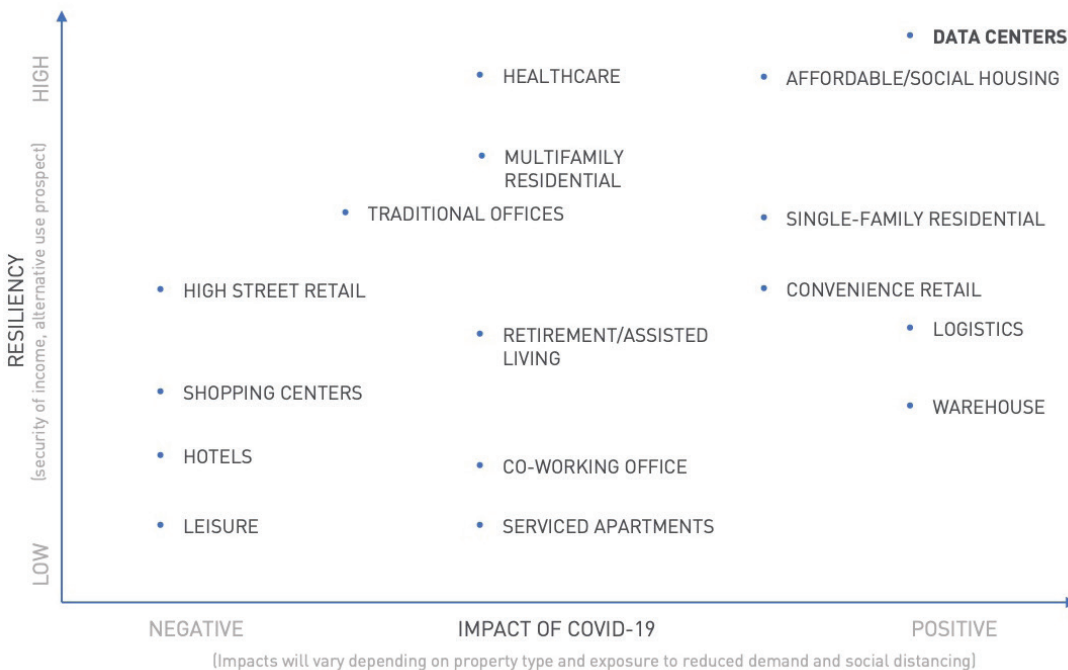
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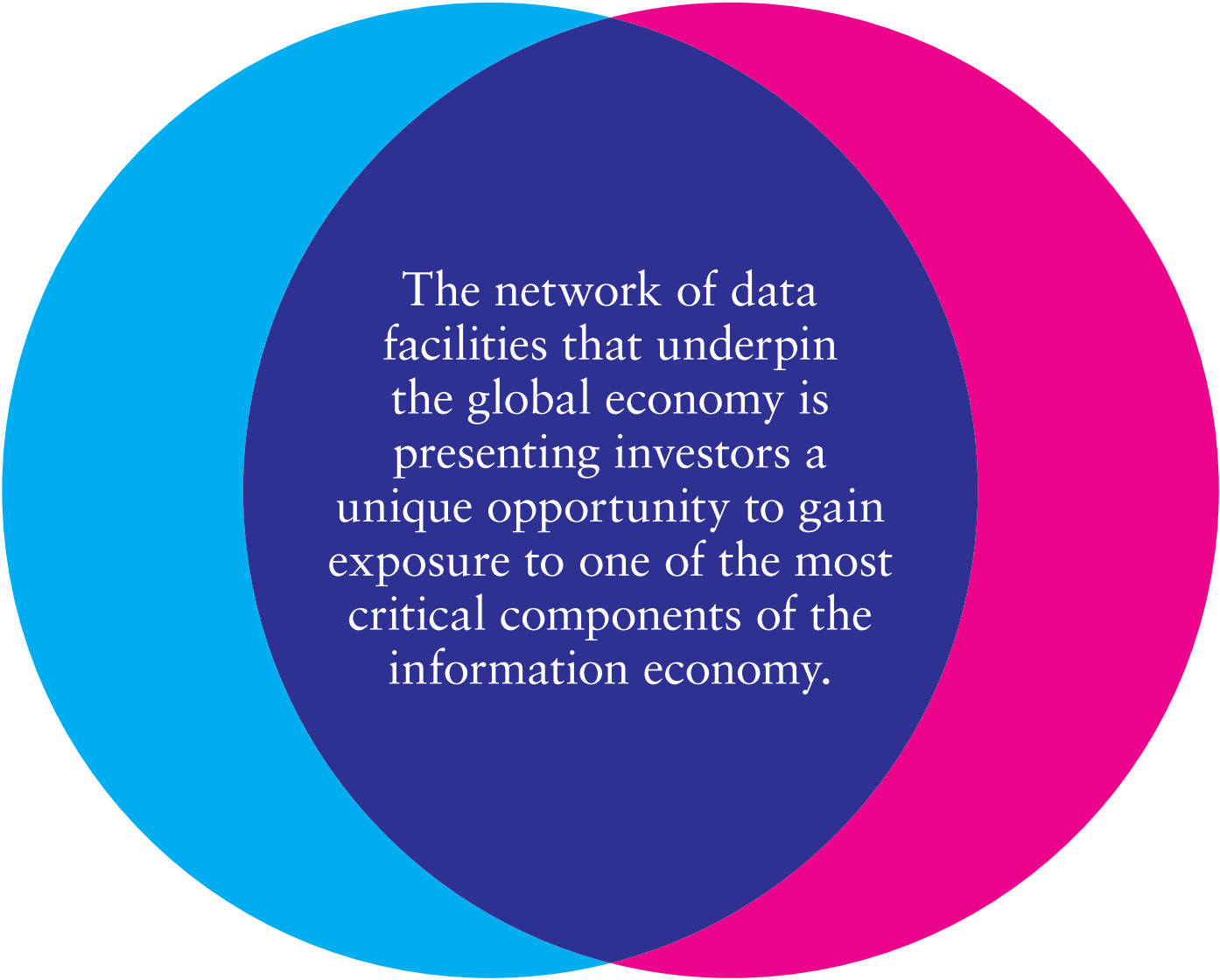
NOTES

- ¹ See also: afire.org/summit/industrial-ugly-duckling-swan/
- ² International Data Corporation (IDC), 2018, [idc.com](https://www.idc.com)
- ³ “How Much Data Is There In The World?,” Bernard Marr & Co., Accessed 12 March 2021, bernardmarr.com/default.asp?contentID=1846
- ⁴ “Cisco Annual Internet Report (2018-2023) White Paper,” Cisco, 9 March 2020, cisco.com/c/en/us/solutions/collateral/executive-perspectives/annual-internet-report/white-paper-c11-741490.html
- ⁵ Zoom Video Communications, 1 April 2020
- ⁶ Joan E. Solsman, “Netflix Subscriber Growth Soars Past 200 Million Members,” CNet, 20 January 2021, cnet.com/news/netflix-fourth-quarter-subscribers-soar-past-200-million-members-stock/

EXHIBIT 3: PROPERTY TYPE RESILIENCY AND COVID-19 IMPACT

Source: Principal Real Estate Investors; as of March 2021





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