DATA CENTER

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UNDERSTANDING DATA CENTERS

National
REAL ESTATE ADVISORS

Since 2010, National has been an active investor in a privately held data center featuring 20 buildings across six operating campuses serving over 165 tenants across the U.S. Over the last 14 years we have received our fair share of questions about this fast growing and increasingly critical aspect of our modern economic infrastructure. The following is a selection of the most common questions we receive.

HOW DO TENANTS CHOOSE THE LOCATION OF THEIR DATA CENTER OPERATIONS?

Like any real estate investment, location is one of the most important factors to consider for data center users. Below is a description of some of the competing factors that must be weighed by tenants when deciding on a location and the ultimate decision will most likely depend on the ultimate application running in the data center:

Cost:
Users will obviously try to minimize the cost of their data center operations. This can drive users away from central cities and towards locations with lower cost of electricity—often the single largest expense for users. Abundant and low-cost power leads to data center concentrations in relatively remote places like the Pacific Northwest.

Connectivity:
Data centers are more desirable in locations where they can provide access to many backbone networks that connect the numerous smaller networks that make up the global internet. The presence of many network connections engenders the formation of data center hubs, such as those in Northern Virginia, Silicon Valley, and Singapore.

Latency:
The distance and number of network exchanges from the data center to the end user can be a factor in the amount of time that data takes to load from a data center. All things being equal, webpages, music and videos will load faster and perform better if the distance traveled is relatively short and there are multiple pathways to the destination. The desire to be near large numbers of users leads some data centers with latency-dependent applications to cluster outside major cities around the world.

Security:
Data centers often house sensitive information for corporations, governments, and consumers. They also need to be reliably accessible 24 hours a day, 365 days per year. The requirement to be reliable and safe leads to data center concentrations in politically, seismically, and environmentally stable regions of the world.

Environment:
Data centers are large users of power and water for cooling. A temperate location with access to sustainable water and power can be the driving force for cost and environmentally conscious users.

Proximity/Accessibility:
Data centers often contain critical operating functions of organizations causing many users to prefer to operate in data centers that are in the same city or even on the same premises as the organization.

WHAT ARE THE DISTINCTIONS BETWEEN EDGE LOCATION AND DESTINATION/CORE DATA CENTERS?

Edge data centers are located near large population centers where there is a lot of connectivity and many users. They are able to provide data with low latency to users in the surrounding area but also tend to be higher cost than core centers. Core data centers tend to be located where it is cheaper to operate often in more remote or rural locations. They will be located where there is connectivity and secure power but are more likely to be optimized for efficient operation rather than low latency.

While massive streaming video and cloud providers need to have their content located in many markets around the country and world in order for their products to operate smoothly for all of their users, other types of uses, like data processing and data storage, are less latency sensitive and can be located centrally or where it is relatively cheap to operate. Both edge and destination locations benefit from the propagation of data in every part of our lives but in slightly different ways, and each location will likely see growth of data centers long into the future.

WHY INVEST IN AN OPERATING COMPANY RATHER THAN A STAND-ALONE PROPERTY?

Data centers house the critical operations of their tenants who cannot afford downtime. Therefore, reliability is often the most important issue for data center tenants. When evaluating data centers, tenants are keenly focused on the operating history of the owner and operator of the data center. It is therefore a competitive advantage to have a long and robust track record across multiple sites in order to attract tenants.

In addition to having a long track record, operating companies can benefit from having multiple data center locations. Large users need multiple operations across the country to reach their customers efficiently and ensure reliability. These tenants often prefer leasing in multiple locations with the same operator rather than having to get comfortable with new operators in each location.

This network advantage is similar to the phenomenon commonly witnessed in retail properties. Large retail operators that own malls and locations across the country can be more competitive than their stand-alone peers in attracting large tenants because they can offer similar experiences in multiple markets where tenants can access more customers and create redundancy in their networks.

Importantly, investing at the platform level also eliminates the conflicts that can occur when an investor invests in a single data center developed and owned by a data center operator who has interests in other data centers that might compete for tenants across the country, in the market or even within the same campus.

IS TECHNOLOGICAL OBSOLESCENCE A SIGNIFICANT RISK FACTOR IN DATA CENTER INVESTMENT?

Considering Moore's Law and the continued exponential growth in computing power generally, potential investors are often worried that technological progress will reduce the current vast demand for data center space. There are several reasons this should not be a concern for data center investors from the way that leases are typically structured to the history of technological growth vs. demand over the past two decades:

Lease Structures/Power:

Under the most common long-term lease structures at data center properties, landlords provide physical space and electrical power capacity to tenants. Often, the landlord also provides HVAC and backup power. In all cases, the tenants, install their computer servers and other IT equipment. Although the server models may become obsolete relatively quickly as computing power becomes ever more compact, this changing technological burden is largely borne by tenants and is easily addressed by installing more modern equipment. The landlord's provision of reliable power in a safe, secure, and well-connected location will always be a necessity even as technology becomes more efficient.

The Illusion of Smaller Devices:

As smartphones, laptops and other consumer devices shrink while growing ever more powerful, it is tempting to think that data centers will eventually be obsolete as everything consumers need will be in the palms of their hands. This thinking, however, is incorrect. As devices get smaller and smaller, more of the tasks they appear to perform are really being outsourced to servers in a data center. Cell phones and IoT devices generate data stored in data centers and make queries that are often answered in data centers, which are then sent back to the device (think of searching for directions).

WHAT ARE THE DEMAND DRIVERS FOR DATA CENTERS?

The ultimate demand driver for data centers is the continuing digitization of every facet of modern life. Nearly every activity done on a computer or smartphone, from sending emails to visiting websites to mapping directions to streaming video, is ultimately taking place in a data center.

Artificial Intelligence (AI):

As the technology landscape continues to evolve, the impact of AI on almost all industries cannot be overstated, including the data center industry. Cloud creation and migration drove significant changes in the data center industry for many years, and now the advent of widely accessible AI tools promises to reshape the data center landscape even more dramatically. Over the past decade, the energy required to train the largest AI models has increased by a factor of 300,000, with the demand roughly doubling every three months. This rate of increase is six times faster than Moore's law, which historically predicted the doubling of computing power approximately every two years.[1] Such exponential growth highlights the urgent need for data center solutions that are not only scalable but also highly efficient, to meet the escalating demands of AI development and deployment.

Conclusion:

National was an early investor in data centers, and our front-row seat has provided us with a hands-on perspective to experience the evolution of our economy and the digitization of the human experience. It seems clear to us that the demand for data centers and the overall telecommunication infrastructure that supports our modern economy will increase. We therefore believe it is critical to also educate the investment community on this incredibly fascinating and unique asset class.

Image created with generative artificial intelligence

1. Haim Israel, Martyn Briggs, Felix Tran, and Kate Pavlovich, "Me, Myself and AI – Artificial Intelligence Primer," Bank of America Global Research, February 28, 2023.