

2019 Data Center Market Overview Greater Chicago

Written by Rich Miller



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Introduction

This report was prepared by Data Center Frontier, in conjunction with datacenterHawk.

ABOUT DATA CENTER FRONTIER



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Data Center Frontier charts the future of data centers and cloud computing. We write about what's next for the Internet, and the innovations that will take us there. The data center is our prism. We tell the story of the digital economy through the facilities that power the cloud and the people who build them. In writing about data centers and thought leaders, we explain the importance of how and where these facilities are built, how they are powered, and their impact on the Internet and the communities around them.

Data Center Frontier is edited by Rich Miller, the data center industry's most experienced journalist. For more than 15 years, Rich has profiled the key role played by data centers in the Internet revolution.

ABOUT DATACENTERHAWK



http://www.datacenterhawk.com

datacenterHawk is a technology company located in Dallas, TX. We strive to create industry-leading products that enable customers to make confident decisions in the data center market.

The Hawk Product Suite is designed to help customers locate, evaluate, and analyze data center solutions quickly. Hawk Search, Compare, Zoom, Financials, Swap and Insight are available through subscription only.

For non-subscribers, datacenterHawk delivers hard to find information on the top Internet exchanges, cloud computing providers, carrier hotels, and colocation facilities in North America on a per-report basis. With a credit card number, IT professionals can use datacenterHawk to reduce the time it takes to find data center market information down from hours to seconds.

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Market Overview & Analysis

After several years of steady but unspectacular leasing, interest in the Greater Chicago data center market is on the rebound, sparked by recently passed economic incentives and new projects in both the Downtown and Suburban Chicago markets.



Chicago is one of the nation's premier markets for data center services, occupying a central place in America's geography and mission-critical infrastructure. The Windy City is a major hub for Internet and financial infrastructure, with active communities of data center users and service providers.

Chicago is America's third-largest city, and an active business market with nearly 40 Fortune 500 companies headquartered in the metro area. Chicago is distinctive in that it sees demand for data center space from a wide range of industries. It is home to major trading exchanges for stocks, commodities and options, making the city a hotbed of activity for the financial services industry.

The region has also become a favored location for hosting, colocation and cloud computing companies. Chicago sees strong demand from the enterprise sector as well, both for primary data centers and as backup/disaster recovery facilities.

The greater Chicago market is home to more than 3.39 million square feet (SF) of commissioned data center space, representing 325 megawatts (MW) of commissioned power, according to market research from datacenterHawk.

The Chicago data center market has experienced an active building phase that has added 115 MWs of capacity in the past two years. During that time, the vacancy rate for data center space has risen from 8.5 percent to 13.8 percent.

New players continue to enter the Chicago market, while incumbent providers are adding space to accommodate future demand. RagingWire/NTT Data Centers and Iron Mountain are each building large facilities in Suburban Chicago, where NYI (New York Internet), Element Critical and SBA Communications have entered the market through smaller deals.

Chicago is among the regions positioned to benefit in coming years as new technologies drive massive demand for data center space and network capacity. Chief among these trends is the gradual shift of IT capacity from enterprise data centers to web-scale cloud computing platforms, which is already driving historic demand from cloud builders like Amazon, Microsoft and Google.



The region's competitive position got a boost when Illinois recently approved a new tax incentive plan aimed at jump-starting data center development in the state. Data center projects now will receive exemptions from state and local sales taxes on data center equipment for 10 years if they invest a minimum of \$250 million in the facility and create 20 high-paid full-time jobs. New development in low-income areas will also receive a 20 percent income tax break.

The new tax breaks address industry concerns that the lack of tax incentives left Chicago at a competitive disadvantage. Absorption has trended lighter over the past year, with slightly smaller deals than seen in years past.

SUPPLY AND DEMAND

Trends in Demand

Companies searching for data centers in the Chicago market include those in the financial, technology, telecom, insurance, and healthcare industries. Like any big American city, downtown Chicago has limited space priced at a premium. In general, users locate their data centers in downtown Chicago in spite of high costs because they require low-latency connectivity. Data center providers understand this need and have built accordingly, tapping the fiberring infrastructure serving Chicago's Board of Trade, Mercantile Exchange, and all of the major financial enterprises with offices downtown.

A TALE OF TWO MARKETS

The Greater Chicago data center market consists of two sub-markets with unique characteristics.

Downtown Chicago

Downtown Chicago is an urban market with excellent connectivity and a limited amount of space.

The downtown data center real estate is focused on "carrier hotels" that lease space to IT and telecom companies, many seeking proximity to the city's financial trading platforms. The Digital

Realty facility at 350 East Cermak has emerged as Chicago's primary data hub, housing dozens of service providers.



Downtown Chicago has primarily been a retail colocation market, offering connectivity and interconnection services but few large physical footprints. For many years, space at 350 East Cermak and other downtown hubs has been in short supply, with limited new inventory coming online.

That started to change with the 2017 opening of a new QTS Realty Trust, Inc. (QTS) data center in the former Chicago Sun-Times printing plant on S. Ashland Avenue. Additional inventory will come online in 2020, when CoreSite expects to complete a new 18 MW purpose-built data center.

Suburban Chicago

Suburban Chicago is home to a thriving market for wholesale providers and single-tenant data centers.

Chicago's suburbs offer the larger footprints that are difficult to find downtown. Data center development west of Chicago heated up in 2007, when DuPont Fabros and Equinix built huge data centers in Elk Grove Village and Microsoft leased a facility in Northlake to host its cloud services.

Leasing in the suburban market was initially slow, but soon accelerated with large deals for space by service providers like Rackspace and ServerCentral. Enterprise deals soon followed, notably at the Ascent Corp. site in Northlake. Digital Realty has also made the move to the suburbs with a large campus in Franklin Park.

CyrusOne now operates a data center in Aurora, with the CME financial exchange as a major tenant, while RagingWire (Itasca) and Iron Mountain (Des Plaines) are building large new projects in Suburban Chicago.



Demand in the Downtown Chicago market will continue to be driven by connectivity, interconnection and access to the city's financial exchanges and business customers in the central business district.

The marquee facility in Downtown Chicago is 350 East Cermak, a massive 1.1 million SF carrier hotel operated by Digital Realty. Data centers inside 350 East Cermak often market themselves as operating inside one of the world's largest carrier hotels.

The Chicago market has a healthy balance of data center requirements coming from both outside and inside the market. Colocation users find the Chicago market attractive because of its central location and proximity to large, corporate businesses.

The Chicago market is attractive to data center users for several reasons:

1. Favorable Business Climate

Chicago is home to numerous Fortune 500 companies, with almost 40 headquartered in the metro area. The unemployment rate in the Chicago metropolitan area has declined in recent years, falling from 12.2% in 2009 to the current 3.8, according to the Bureau of Labor Statistics. According to JLL, Chicago is the second largest office market in the US, with nearly 250 million SF of office space.

2. Competitive Colocation/Cloud Environment The Chicago market benefits from investments by data center developers large and small along with a central location, an abundance of fiber, and several Internet peering exchanges.

3. Relatively Low Power Cost

Chicago's electricity costs are lower than the national average and competitive with other large markets.

4. Low Risk of Natural Disasters

Compared to hurricane and earthquake-prone coastal cities, catastrophic natural disasters are almost unheard of in Chicago.

DatacenterHawk reports that there were 5.9 MW of absorption in the Greater Chicago data center market in the second quarter of 2019, roughly consistent with trends over the past year, in which absorption has fluctuated between 3 MWs and 6.5 MWs per quarter.

The growth of cloud computing has had significant benefits for the Chicago market. Some hyperscale providers have built large campuses in rural areas. But latency and proximity to customers remain important priorities for online service platforms, making Chicago attractive for its geography and critical mass of customers.

Chicago has an average of 300 days out of the year that are cool enough to pipe outside air into a data center. This "free cooling" helps to lower the total energy costs associated with operating a data center.

Google was the most active tenant in the Chicago market in 2018, leasing 4.4 MWs of space in deals with QTS and Equinix, according to a report from North American Data Centers. Rackspace, Microsoft and Oracle have also built significant cloud operations in Chicago-area data centers.

Chicago's active community of cloud providers also provides a "future-proofing" effect, increasing the likelihood that demand for space will remain strong even as corporate IT users shift workloads from on-premises data centers to cloud platforms. Some of these requirements will move to "hyperscale" clouds, while others may shift to service providers offering services targeting specific industry verticals or use cases.

Climate is a factor in Chicago's appeal to data center providers and customers with significant requirements. Chicago has an average of 300 days out of the year that are cool enough to pipe outside air into a data center. This "free cooling" helps to lower the total energy costs associated with operating a data center.

Some customers choose to use space in both Chicagoarea markets, using space Downtown for applications that require low latency or interconnections, while using larger footprints in the Suburban Chicago market for data storage and bulk processing.

The largest 2018 deal in Suburban Chicago was a 3.3 MW deal for Nokia with Digital Realty, according to North American Data Centers, highlighting the sub-market's appeal for enterprise customers.



In 2018 and 2019 most of the wholesale deals in Chicago have been in the 500kW to 3 MW range. During that period, we have not seen any of the massive hyperscale deals from previous years, which included a 14.5 MW lease in 2017 and a 30 MW lease in 2016.

There are signs that Illinois' passage of tax incentives is generating new interest in the Greater Chicago market. Providers in the region report an increase in inquiries about space, a trend borne out in recent spikes in search traffic on datacenterHawk.

Trends in Supply

Chicago is the sixth-largest data center market in commissioned data center capacity, following Northern Virginia, Northern California, Dallas/Fort Worth, Phoenix and Northern New Jersey.

Chicago continues to be one of the most active markets for new development, with more than 200 MWs of capacity either under construction or in the planning phases.

Historically, Downtown inventory consists of space in large, multi-tenant office buildings converted for

data center use. Existing space can be particularly "sticky" with limited turnover due to the value of a Downtown presence in key verticals. The availability of large footprints is improving with the construction of new inventory from QTS and now CoreSite.

With a 13.8% regional vacancy rate for data centers, there is existing supply in both the Downtown and Suburban Chicago markets. Both sub-markets will be adding new inventory in coming months, as CoreSite is building a new facility Downtown, while RagingWire, Iron Mountain, and STACK Infrastructure have data centers under construction in Suburban Chicago.

In recent years, the Suburban Chicago market has seen active development in the area surrounding O'Hare Airport, especially Elk Grove Village and Franklin Park. A brief period of limited power supply was addressed with the 2018 completion of a new ComEd substation in Itasca, which will also support additional capacity in Elk Grove Village. Long-range capacity plans for the area call for construction of another new ComEd substation in north Elk Grove Village in the future.





Here are some of the highlights of development activity in the Greater Chicago market for 2019:

CoreSite under construction with CH2

CoreSite recently kicked off development on its new Chicago data center, CH2. CoreSite plans to deliver 18 MW of commissioned power at the facility, which will be split between three 6-MW phases. The company purchased the two-acre site in early 2018 and will develop a four-story data center. The new four-story facility will be connected to the company's current Chicago data center location, which is less than a mile away. Notably, the CoreSite project is the first "greenfield" data center – purpose-built from the ground up – in Downtown Chicago in recent memory.

RagingWire/NTT Building Campus in Itasca

RagingWire has begun construction on a campus in Itasca, where it plans to deploy two purpose-built 36 MW data centers for a total of 72 MWs of capacity. The first phase of the project will offer a 6 MW data hall and come online in 2020.

STACK Infrastructure plans second Chicago data center

STACK Infrastructure recently announced plans to build a second data center in Elk Grove Village. STACK will build the new data center adjacent to its existing facility, which STACK acquired from T5 Data Centers. The company intends to build a multi-story data center that will deliver 20 MW of commissioned power when completed.

Lincoln Rackhouse buys ByteGrid; Agile will operate facilities

Lincoln Rackhouse recently purchased ByteGrid, a data center provider with locations in Chicago, Seattle, and Silver Springs, MD. Its Chicago data center is located in Aurora and currently has 2.4 MW of commissioned power, with another 1.5 MW planned for future expansion. The ByteGrid facility is Lincoln Rackhouse's first location in Chicago, and has been leased to Agile Data Sites, which will handle the data center operations.

Equinix completes CH3 expansion

Equinix's largest data center in Chicago continues to grow after the company's recent delivery of the fifth expansion phase. Phase V in the Equinix CH3 facility included 2 MW commissioned power and 13,500 SF of space. CH3 is located in Elk Grove Village in close proximity to other large data centers operated by Digital Realty, Stream, Stack Infrastructure, EdgeConneX, and Element Critical. Equinix's highly connected approach makes CH3 a valuable asset as surrounding data centers link to the facility to leverage its connectivity to the rest of Chicago and the US.

Iron Mountain Building in Des Plaines

As it continues to add capacity in major markets, Iron Mountain has acquired a 13-acre parcel in Des Plaines and plans to build 330,000 SF of data center capacity, deployed in multiple phases.

There have also been smaller deals bringing new players into the Chicago market. Here's a roundup. In September 2019, New York-based colocation specialist NYI acquired a Navisite facility from Oak Brook. In January 2019, colocation provider Element Critical acquired two former Sungard Availability data centers in Wood Dale to enter the Suburban Chicago market.

Chicago is also shaping up as an early market for edge computing, which seeks to process data and services as close to the end user as possible.

Edge data center specialist Vapor IO has chosen Chicago as the site for its first two sites. Vapor IO is creating a distributed network of edge colocation sites, housed in micro modular data centers that can be deployed at key points on the network, including telecom towers and antenna sites. Tower operator Crown Castle is an investor and partner for Vapor IO, while bare metal cloud specialist Packet is a lead tenant.

In September, cell tower specialist SBA Communications purchased the New Continuum data center business, including an 80,000 SF data center in West Chicago and a fiber loop. SBA owns 16,000 cell tower locations around the U.S., and indicated that the New Continuum facility would serve as an R&D facility to assess opportunities in edge computing. The deal is similar in concept to American Towers' acquisition of ColotATL earlier this year.



Business Environment

CONNECTIVITY

An abundance of fiber providers and several Internet exchanges make Chicago a hub for content delivery services to a large portion of the American Midwest. On July 1, 2015, local Chicago politicians approved levying a 9% tax on local consumers of subscription cloud services such as Netflix, Spotify, and Xbox Live. Because enforcement of this so-called "Netflix Tax" on consumers will also add a compliance burden on the companies that deliver the services, data center providers should be aware of these potential added costs.

POWER

The Illinois General Assembly passed legislation in 1997 that deregulated the state's electricity markets. The law separated the business of generating and selling power from the business of transmitting and distributing it. This forced Commonwealth Edison (ComEd), the monopoly supplier of electricity in Northern Illinois, to become a subsidiary of Chicagobased Exelon Corporation, one of the nation's largest power utility companies. ComEd sells and distributes the electricity generated by Exelon's plants that use a diverse mix of petroleum, natural gas, nuclear, and non-hydro renewable sources.

The Chicago City Council is getting ready to renegotiate its franchise agreement with ComEd, the main energy provider, for the first time since 1992. The current agreement is set to expire in 2020. The renewal may bring about the risk of higher energy prices for businesses in coming years, as officials contemplate higher franchise fees to address the city's budget challenges. But a new deal might also improve the reliability of the electric grid and environmental impact of electricity. City officials will be pushing ComEd to align with clean-energy objectives.

HAZARD RISK

The Chicago market has a low risk for natural disasters. Hurricanes are non-existent, and it is rare that seasonal storms result in flood or tornado damage. The United States Geological Survey (USGS) notes that while the New Madrid fault line runs through southern Illinois, the small earthquakes caused by it have limited effect on Chicago. In the past 100 years there have been eight earthquakes in northern Illinois registered by the USGS, but none have caused any significant damage to the Chicago area.

ECONOMIC DEVELOPMENT AND INCENTIVES

The State of Illinois enacted a new tax incentive for data center operators in 2019. New projects that will invest at least \$250 million and create 20 full-time high-paying jobs will receive exemptions on state and local sales taxes on equipment purchases for 10 years. Development in low-income areas can also receive a 20% income tax break. Another potential incentive is for data center providers to leverage the Illinois Economic Development for a Growing Economy Tax Credit Program (EDGE). Chances are low, however, as they must "demonstrate that if not for the Credit, the Project would not occur in Illinois." In 2014, QTS made a deal to buy the former Chicago Sun-Times newspaper printing facility and convert it into a data center. The deal was endorsed by the Chicago Committee on Economic, Capital and Technology Development and granted a property tax break to reduce the property's assessed value for 12 years—and save QTS \$11.4 million over that period.

On top of the city's relatively high property taxes, Chicago proper enacted a 10.25% sales tax in October 2015. The new rate is one of the highest in the United States and higher than 99.6% of other locales in Illinois. This is a key reason many data centers set up in the city's western suburbs where the sales tax rates can be a guarter of a percentage point lowera significant savings when considering the scale of investment required for a data center. Similar to other states with programs to revitalize economically depressed areas, Illinois' Enterprise Zone Act enables qualifying businesses to receive a sales tax exception. Although data centers are not specifically mentioned as a gualified business, the Illinois Department of Commerce & Economic Opportunity's website promotes commercial buildings in suburban Chicago's Enterprise Zones for redevelopment as data centers (e.g., the AT&T Center in Hoffman Estates, IL).

The city of Chicago's Data Center Express program also helps to identify areas in Chicago proper that are ripe for investment and redevelopment. Chicago's South Side, an industrial area in decline for years, is experiencing a renaissance thanks to new data center developments. Real estate investment trusts (REITs) are actively redeveloping South Side buildings into world-class data centers due to the area's proximity to downtown, robust electrical grid designed for large factories, and relatively inexpensive prices.



Chicago Data Center Market Supply Overview

MULTI-SITE PROVIDERS

Here's a look at the data center providers that operate two or more facilities in the Chicago market, or are developing multi-site campuses, presented alphabetically.

CoreSite

CoreSite is a colocation provider and REIT headquartered in Denver, CO. With a location in eight different markets, CoreSite provides colocation and connectivity throughout the 20 data centers in their portfolio. Their dense environment of network and cloud/IT service providers give customers interconnection and peering opportunities throughout their facilities. CoreSite serves both small and large customer power requirements.

CoreSite owns a multi-story building at 427 LaSalle in downtown Chicago. Located in the building is CoreSite's CH1, a 178,000 SF carrier-neutral data center with access to the same highly reliable utility power and network fiber rings that serve the Chicago Board of Trade offices next door. The facility's UPS system is configured for N, N+1, and 2N redundancy, while the generators and mechanical infrastructure are configured for N+1 redundancy. The data center is SSAE-16 SOC 1 Type 2, SOC 2 Type 2, HIPAA, and PCI compliant. CoreSite CH1 also features 24/7 onsite data and physical security, office space, loading docks, a reliability of six nines (99.999999%), and Microsoft Azure ExpressRoute.

■ 1Q 2018: CoreSite purchased a two-acre land site in downtown Chicago to construct their second facility in the area. The four-story facility will be built over three 6 MW phases, and construction began in 2Q 2019.

CyrusOne

CyrusOne is a global colocation company headquartered in Dallas, TX with more than 45 data center facilities throughout the United States, Europe and Asia. In efforts to drive down operational costs for customers, CyrusOne delivers their "Massively Modular" data center concept, which brings power/ space to the market quickly in large facilities. In addition, the company offers solutions with various levels of redundancy (N/N+1/2N). The company's strong customer relationships with Fortune 1000 data center users made them an attractive acquisition for Cincinnati Bell in 2010 for \$525 million. CyrusOne went public in 1Q 2013, steadily growing through both construction of new data center facilities in top markets and strategic acquisitions of rivals. For example, in July 2015, CyrusOne acquired Cervalis to gain four data center facilities serving the New York metropolitan area.

In efforts to drive down operational costs for customers, CyrusOne delivers their "Massively Modular" data center concept, which brings power/space to the market quickly in large facilities.

CyrusOne's suburban Chicago facility is located at 1850 Springer Drive in Lombard, IL. CyrusOne Lombard, with 14,000 RFSF of commissioned data center space, is designed to accommodate 9 MW of commissioned power at full build, receiving dual-feed utility power from 1.5 MW and 2 MW transformers. The power infrastructure can be configured for multiple levels of redundancy (N, N+1) while the cooling infrastructure is configured for N+1. CyrusOne Lombard is built to meet industry certifications for data security such as SSAE 16 (SOC I type II), PCI DSS, HIPAA, ISO 27001, and FISMA. Like CyrusOne's other facilities across the United States, their Lombard data center is designed to accommodate expansion, providing multiple custom data halls and office space for clients when needed.

■ 1Q 2016: CyrusOne announced the acquisition of the CME Group Data Center located in Aurora, IL for \$130 million. Upon closing the deal, CME executed a 15-year lease with CyrusOne, and has the ability to continue to grow in the 428,000 SF facility. The transaction provides CyrusOne with 36,000 SF of commissioned space to lease. The remaining 6 MW and 25,000 SF of commissioned capacity was delivered in 1Q 2017.

■ 4Q 2016: CyrusOne broke ground on their newest data center on their existing CME Campus. This is their first new building on the site, and will add over 425,000 SF of data center space. The facility will



chase Chicago financial market demand. The first two halls were delivered in 4Q 2017, each offering 9 MW and 60,000 SF of commissioned capacity. One hall was fully pre-leased at the time of delivery. Another 272,000 SF of the building will be available as a shell for future development.

Cyxtera

When private equity firms BC Partners and Medina Capital acquired CenturyLink's colocation portfolio in 2017, they combined the assets gained to create a brand-new company called Cyxtera Technologies. Cyxtera is a global colocation business with 57 data centers in more than 30 markets. The company offers highly secure solutions to meet strict requirements such as those expected in financial and government entities. Cyxtera Technologies is headquartered out of Coral Gables, Florida, and offers a cloud-ready infrastructure platform for more than 3,500 customers.

In 1Q 2018, Cyxtera acquired Immunity Inc, a provider of cyber-security services. The addition of Immunity services increases Cyxtera's security strength and helps mitigate the risks of cyber-attacks.

Cyxtera operates three carrier-neutral data centers in the Chicago area. Two of the data centers (CH2 and CH4) are located in 350 East Cermak, a 1.1 million SF facility owned by Digital Realty. Cyxtera CH2 is 142,346 SF of leased space and 8.5 MW of total utility power. The smaller CH4 data center is 41,073 SF of leased space and has total utility power of 3.4 MW. Both facilities deliver power densities up to 150 W/SF and configure N+1 redundancy at the facilities' electrical and mechanical infrastructure.

Northwest of Chicago at 2425 Busse Road in Elk Grove, IL is Cyxtera's CH3 data center. This former Savvis building delivers 17.6 MW of total utility power from multiple ComEd feeds. CH3 delivers power densities of 150 W/SF and has N+1 configurations for both the electrical and mechanical infrastructure.

■ 1Q 2018: Cyxtera acquired Immunity Inc, a provider of cyber-security services. The addition of Immunity services increases Cyxtera's security strength and helps mitigate the risks of cyber-attacks.



Digital Realty

Digital Realty (DLR) is a real estate investment trust (REIT) and the largest wholesale data center provider in the world. The company has grown to over 210 locations across five continents after going public in 2004; leveraging economies of scale to measurably benefit customers. Digital Realty delivers colocation, powered shell, private suite, and custom data center solutions. In addition, Digital Realty is focused on delivering relevant services to their clients such as move-in ready racks and cabinets in certain locations. The company is also focused on providing services surrounding connectivity to the Internet and cloud providers at multiple locations.

■ Part of Digital Realty's growth can be attributed to two sizable acquisitions. The first was the purchase of Telx in July 2015 for \$1.89 billion. The Telx acquisition expanded and expedited Digital Realty's ability to provide integrated services for SMB-toenterprise customers. Additionally, Digital Realty purchased DuPont Fabros in September 2017 for nearly \$8 billion, adding 12 wholesale data centers to Digital Realty's portfolio. Digital Realty employs nearly 1500 people and is headquartered in San Francisco, CA.

Digital Realty owns 350 East Cermak, one of the world's biggest carrier hotels. Before it was developed into a data center, the building was originally a storage facility for the printing presses used to print phone books. Housing a mix of data center and office tenants, the eight-story, 1.1 million SF building can provide over 100 MW of total utility power through three electric feeds and dozens of peering and connectivity options. Digital Realty has delivered 18.6 MW of commissioned power in the facility. 350 Cermak is close to being fully leased. Several colocation providers lease space from Digital Realty on a triple-net lease basis and commission their power independently of DLR.



About two miles away, DLR's 600 South Federal is a newly-upgraded colocation facility with access to around .8 MW of commissioned power. 600 South Federal delivers a variety of fiber providers, Internet Exchanges, cloud providers, peering networks, and a direct connection back to 350 East Cermak.

Digital Chicago is a 23-acre data center campus in the Village at Franklin Park (a 30-minute drive west of Chicago). The campus houses three buildings served by multiple utility substations and fiber providers—with direct connectivity back to both 350 East Cermak and 600 South Federal. 9333 West Grand Blvd was the first building completed on the campus, and consists of 117,616 SF. It features 6.87 MW of commissioned power and is fully leased. The second phase of the campus is the 251,500 SF building located at 9355 West Grand Boulevard.

■ 1Q 2016: Digital was successful in fully leasing almost all of the second phase of the campus. In addition, they increased the capacity at the facility to 21.6 MW (from 14.4 MW) to accommodate several large users. The third building on the campus is 9377 West Grand Avenue, a 176,730 SF building that will accommodate 12.8 MW of commissioned power (expandable to 16.0 MW) upon demand.

■ In 2015 when DLR acquired Telx, the company also gained two of their interconnect-rich data centers: CHI1 in their 350 East Cermak building and CHI2 in 600 South Federal, an eight-story building near Chicago's downtown Loop district. Additionally, Digital Realty closed on their merger with DuPont Fabros in 3Q 2017, adding three data centers to their Chicago portfolio.

■ 4Q 2016: Digital Realty announced their plans to construct a 12-story, 54 MW data center tower at 330 East Cermak, across from their existing 350 East Cermak carrier hotel. The plan was originally designed by CenterPoint Properties, but has since joined with Digital Realty to accomplish their goals. DLR has, however, voiced that major development will not begin until an anchor tenant has been established.

■ 1Q 2017: Digital Realty demolished the existing building on their Motorola site (purchased in 2016) and began preparing the site for development. They plan to construct up to 36 MW on the 18-acre site. Digital also purchased a separate site adjacent to their existing campus in Franklin Park for \$14.1 M. The site currently houses an existing 263,000 SF building, which will be replaced once the current two-year lease on the building ends.

■ 4Q 2017: Digital Realty purchased an existing data center in Chicago from Carter Validus. The facility is leased to several major tenants, including Ascent Data Centers.

■ 1Q 2019: Digital Realty deployed their internet exchange services in Chicago.

Equinix

Equinix is a global data center company providing colocation, interconnection, and connectivity services to users. The California-based company has over 200 data centers in 52 markets throughout

In North America, Equinix revenues come from colocation and telecom interconnections while a mix of colocation and managed infrastructure services bring in more revenues for the rest of the world.

the world, and gives access to over 2,500+ cloud providers in their portfolio. Equinix operates their data centers under the International Business Exchange (IBX) product name. The IBX system enables Equinix's partners and users to leverage a scalable, globally-connected technology platform for application, managed service, and information delivery.

Equinix pricing is typically higher due to the ecosystems created in Equinix facilities and access to cloud and connectivity services. In North America, Equinix revenues come from colocation and telecom interconnections while a mix of colocation and managed infrastructure services bring in more revenues for the rest of the world.

Three of the four Equinix data centers in the Chicago region are located inside Digital Realty's 350 East Cermak building (CH1, CH2, and CH4). The nine-story carrier hotel houses other data center providers as well, but Equinix is certainly one of the largest. Many of the customers in this facility have strong ties to the financial industry and benefit from the dense connectivity offered at the site. Equinix's CH1 is located on the 5th floor of the building and contains approximately 51,000 SF of commissioned



data center space. The configuration for this data center provides densities up to 2.4 kVA per cabinet in an N+1 UPS environment. The data center on the 6th floor, known as CH2, is approximately 58,852 SF of commissioned data center space. The electrical and mechanical systems are configured similarly to the CH1 data center on the floor below. The third data center at 350 East Cermak, CH4, came online in 2010 and added 400 cabinets to the Equinix Chicago supply chain. Standard cross connects provide easy access to CH1 and CH2 from the 8th floor CH4 data center. Equinix CH4's 23,614 SF of commissioned data center space provide cabinet densities of up to 4.0 kVA in a 2N UPS configuration.

The fourth data center, CH3, is a three-story building at 1905 Lunt Avenue in suburban Elk Grove, IL, a city directly west of Chicago O'Hare Airport and about 25 miles from 350 East Cermak. At the time of construction in 2007, the facility was the largest data center within the Equinix portfolio.

■ 2Q 2017: Equinix acquired three Verizon data centers in the Chicago market. Formerly a Verizon "advanced" data center (featuring 24/7 surveillance and direct access to Internet peering interconnects) in Downer's Grove, one of these facilities is located at 501 63rd Street on the 2nd floor of Building C. Verizon marketed this data center as having diverse connectivity options for both colocation and cloud customers, with power and cooling infrastructure configured for N+1 redundancy.



Closer to downtown, Verizon operated two "standard" colocation facilities (fewer options for connectivity and customer access): one on the 8th floor of the DLR-owned 600 South Federal Street facility and the other at 800 South Wells. These Chicago facilities are SSAE 16-certified and have options for value-added services such as remote hands support. ■ 1Q 2019: Equinix began construction on a 2 MW expansion at their CH3 data center, which they delivered in 3Q 2019. The expansion is Equinix's fifth phase of growth at CH3.

Iron Mountain has facilities in Boston, Kansas City, Northern Virginia, Pennsylvania, Denver, Amsterdam, London, and Singapore, and is beginning to grow into additional markets to compete in the colocation industry.

Iron Mountain Data Centers

Iron Mountain is a data center operator headquartered in Boston, MA. The company has facilities in Boston, Kansas City, Northern Virginia, Pennsylvania, Denver, Amsterdam, London, and Singapore, and is beginning to grow into additional markets to compete in the colocation industry. Iron Mountain is more specifically known for its two underground data centers in Pennsylvania and Kansas City.

■ 1Q 2018: Iron Mountain purchased IO Data Centers, adding data center assets in Phoenix, New Jersey, and Columbus.

■ 4Q 2018: Iron Mountain executed a ground lease agreement with plans to construct their first Chicago data center at 1680 E Touhy Avenue in Des Plaines. Plans call for a 330,000 SF building, with capacity deployed in phases.

QTS Data Centers

QTS Realty Trust (QTS) is a publicly-traded real estate investment trust (REIT) with more than 25 data center properties in the continental United States. The company traditionally finds large, robust facilities and transforms them into LEED-certified data centers. QTS' client list includes mostly Fortune 1000 customers, to whom they provide hybrid, wholesale, and hyperscale data center services, along with a variety of managed services through their Software-Defined Data Center infrastructure.

QTS' 2800 South Ashland data center is the former printing facility for the Chicago Sun-Times newspaper. The facility is located a few miles south of the Financial District in downtown Chicago and was purchased in 3Q of 2014, for \$18 million. QTS began a phased redevelopment of the building shortly after



the acquisition. The redevelopment of the 317,000 SF building targets a full-build power capacity of 40 MW of gross power and 134,000 SF of commissioned data center space. QTS opened the facility on July 1, 2016, by delivering 48,000 SF of commissioned data center space and associated critical power. Power to 2800 South Ashland is provided by dual feeds from ComEd's Quarry substation along with a third emergency utility line coming from the Crawford substation. The facility is the first data center to receive UL's UL 3223 safety certification.

■ 3Q 2018: QTS delivered a new 8 MW, 40,000 SF hall at their downtown data center, doubling their capacity there.

■ 2Q 2019: QTS signed an agreement to purchase power equivalent to their Chicago and New Jersey capacity from the Rio Bravo Wind Farm in Texas for 10 years.

■ 3Q 2019: QTS was under construction with 10,000 SF of capacity.

RagingWire provides colocation and network solutions for users needing cabinets, cages or private suites, as well as wholesale data center space.

RagingWire / NTT Data Centers

Founded in 2000, RagingWire Data Centers currently operates over 2 million SF and is headquartered in Sacramento, CA. The company provides colocation and network solutions for users needing cabinets, cages or private suites, as well as wholesale data center space.

■ 3Q 2014: the majority of RagingWire was acquired by NTT Communications in an effort to expand their North American footprint. RagingWire Data Centers will rebrand as NTT in coming months as NTT brings together 28 of its affiliate companies into a single entity to serve the global IT marketplace.

RagingWire operates 2 million square feet of data center space delivering 265 MW of critical IT load, with an additional 3 million square feet currently under development.

RagingWire will rebrand as NTT in coming months as NTT brings together 28 of its affiliate companies into a single entity to serve the global IT marketplace.

■ 1Q 2018: RagingWire purchased a 19-acre land site in the Hamilton Lakes Business Park at 755 Pierce Rd. in Itasca, which is about 27 miles northwest of downtown Chicago. Itasca is in the prime area for wholesale data centers, which includes Franklin Park and Elk Grove Village. RagingWire will initially construct a pair of 36 MW, 330,000 SF facilities, to be called CH1 and CH2. At full build, RagingWire's Chicago data centers will offer 72 MW of commissioned power and 660,000 SF of commissioned space. Each two-story 36 MW building will have six vaults with 6 MW in each vault.

STACK INFRASTRUCTURE

Launched in 2019, STACK INFRASTRUCTURE is a data center company branded and sponsored by investment company IPI Partners. Designed to meet the needs of both rapidly scaling enterprises and hyperscale companies, STACK offers an array of tailored infrastructure services to customers across the US. The company provides three data center solutions: HYPER STACK (hyperscale campuses and build-to-suit options), POWER STACK (powered shells), and READY STACK (readily available wholesale colocation and private suites). STACK's current assets include eight data centers spanning six US markets, with expansion sites located adjacent to six of those facilities.

■ 3Q 2018: IPI purchased T5's data center in Elk Grove Village for \$119 million. The 210,000 SF data center can hold up to 9 MW of commissioned power at full build, is LEED Silver certified, and fed by two separate substations.

■ 2Q 2019: Stack Infrastructure announced their plans to construct a second Chicago data center on the land next to their existing facility. Stack plans to deliver up to 20 MW of commissioned power to the facility.





OTHER PROVIDERS

Companies with one data center in Chicago, listed alphabetically.

1547 Realty

1547 Realty Group is a data center development company located in New Jersey. The leadership of the company is made up of experienced executives from the data center and financial industries. The company currently has three operating data centers in New York, Wyoming, and Hawaii, with ongoing projects in San Francisco, Toronto, and Chicago. Build-to-suit, turnkey and powered shell data centers are products 1547 has currently delivered to the market at its data centers in New York, Wyoming, Hawaii, and Chicago.

■ 3Q 2015: the 1547 Realty Group purchased the Schulze Baking Company building at 40 East Garfield Boulevard on Chicago's south side. 1547 is taking advantage of the facility's location to leverage the building's robust electrical infrastructure, proximity to major fiber lines, and lowered tax burden due to the area's designation as an enterprise zone. The data center operator has plans to build 52,000 SF of commissioned data center space and approximately 5 MW of commissioned power in the first phase.

■ 4Q 2018: 1547 announced a purchase of their second data center in Chicago, through their partnership with the CIM Group. The 66,000 SF downtown data center has existing tenants and access to 15+ fiber carriers.

360TCS

360 Technology Center Solutions (360TCS) provides high-density colocation and disaster recovery solutions. 360TCS offers users in the Chicago area a blend of extreme power density, redundancy, and diverse connectivity.

The 360TCS data center is located at 360 E 22nd Street in the Chicago suburb of Lombard, IL. The facility is equipped with dual utility feeds, and cabinets in the data center are able to serve up to 4×30A/208V three-phase power. The data center floor delivers power densities of over 500 W/SF and 17 kW+ per cabinet. A carrier-neutral facility on a private fiber ring, 360TCS has access points in Chicago's two primary carrier hotels, 350 East Cermak Road and 111 North Canal Street. This enables low-latency connections to over 200 carriers and an extensive network of financial exchanges and market data feeds. As a key differentiator, 365 Data Centers guarantees at least nine fiber provider options in each of their facilities.

365 Data Centers

Headquartered in Emeryville, CA, 365 Data Centers is a carrier-neutral data center provider with locations in eight markets across the United States. Providing colocation, interconnection, and remote hands services to clients, the company gives users a 100% uptime SLA. As a key differentiator in the crowded carrier-neutral data center market, 365 Data Centers guarantees at least nine fiber provider options in each of their facilities. 365 Data Centers offers quick start colocation bundles, allowing client access to colocation services quickly, with loads from 2 kW-5 kW on a month-to-month term, but pricing plans are also available for 24-36 month terms.

From their secure, fourth-floor 13,767 SF colocation facility at CoreSite's 427 La Salle Street location, 365 Data Centers guarantees both 100% uptime SLAs and over a dozen top fiber provider options. The SSAE-16 certified facility meets HIPAA, PCI and SOC Type 2 compliance. A 400 and 500 kW diesel generator provide backup to the site.

Agile Data Sites

Agile Data Sites is a customized data center colocation company that provides custom suites, cages and rack clusters. Their disaster recovery options allow for the highest levels of business continuity in the colocation industry.

■ 3Q 2019: Agile Data Sites announced a partnership with Lincoln Rackhouse, procuring a portion of the service business recently acquired by Lincoln Rackhouse from Bytegrid. Agile is headquartered in Monmouth Junction, New Jersey.

Agile's Chicago data center is located in Aurora at 4267 Meridian Parkway. Their data center is a carrier-neutral facility with 2.4 MW of commissioned data center capacity and 33,513 SF of commissioned data center space. The UPS redundancy can serve needs of N+1 or 2N, while the cooling systems are configured at 2N.



Ascent Data Centers

Ascent is a data center solutions provider located in St. Louis, MO. Founded in 1998, Ascent's client list includes several Fortune 500 companies and primarily serves the technology, financial, healthcare, telecommunications, pharmaceutical, and other industries.

Built on 20 acres in the suburbs west of Chicago, Ascent's Chicago data center (CH2) is a large multitenant facility with redundant electric feeds and an on-site substation delivering over 54 MW of utility power. Ascent operates multiple "Dynamic Data Center Suites" in CH2, a turnkey solution where clients can parcel up to 1.3 MW in commissioned power for dedicated data centers up to 8,700 SF of commissioned data center space. Each suite is carrier-neutral and designed with 2N UPS redundancy and N+1 for its power and cooling infrastructure.

■ 4Q 2017: the ownership of Ascent's Chicago data center changed, with Digital Realty purchasing the facility from Carter Validus.

EdgeConneX

EdgeConneX is a colocation and network services company headquartered in Herndon, VA. The company created a U.S. network of over 25 smaller "edge-of-network" data centers designed to lower

The EdgeConneX 25-30 MW data center is one of the first hyperscale data centers built by EdgeConneX, who has historically executed smaller transactions in edge markets.

latency and increase application performance. The company's Edge Data Centers (EDC) enable distribution of content at the edge of the Internet. All EdgeConneX EDCs are designed to support extremely high power densities with a simplified per kW pricing model.

■ 4Q 2017: EdgeConneX announced their purchase of a 151,000 SF building from Prologis in Elk Grove Village. EdgeConneX purchased the building for the anchor tenant who will occupy it, Microsoft. The 25-30 MW data center is one of the first hyperscale data centers built by EdgeConneX, who has historically executed smaller transactions in edge markets.

Element Critical

Element Critical is committed to owning and operating well-maintained data centers that deliver a basic formula of fiber connectivity, high power and efficient cooling, retail and wholesale services, and metered power down to a single circuit.

Established under the name CentralColo in 2013, Element Critical launched their new brand in 3Q 2017. The company's primary facility is a large, carrier-neutral, network dense, and cross connect friendly Tier III storage facility in the heart of Silicon Valley. They have premium power provided through major providers, distributed cooling through multiple sources, and premium space that is safe and secure. Element Critical is headquartered in San Francisco, CA.

■ 1Q 2019: Element Critical purchased two data centers in Chicago. Both data centers are in Wood Dale, in close proximity to each other. Combined, the data centers can offer up to 15 MW and 111,000 SF of commissioned capacity.

Evoque Data Centers

Established in 2019, Evoque Data Center Solutions is a colocation provider that operates more than 30 data center facilities worldwide. A portfolio company of Brookfield Infrastructure, the company was launched in January 2019 upon the Brookfield acquisition of AT&T's data center assets. The subsequent rebranding to Evoque included the transfer of colocation operations, fixed assets, leases, and ownership of 31 facilities (18 located in North America) to the new company. Evoque supports an array of industry types, including utilities, transport, energy, communications, healthcare, and technologies. Evoque Data Centers is headquartered in Dallas, Texas.

The Chicago IDC, a SSAE 16 Type 2-certified facility, is located southwest of downtown at 4513 Western Avenue in Lisle (pronounced "Lie-ul"), IL. Formerly a manufacturing plant, the facility was retrofitted into a data center with dual-feed utility electricity to support 120 W/SF power densities on 78,000 SF of commissioned data center space. The Chicago IDC's power and cooling infrastructure is configured for N+1 redundancy and the facility stores three full days of diesel fuel for the backup generators. Although the building has a minimum of two 10 Gb Ethernet WAN uplink connections to AT&T's global IP network, the Chicago IDC is a carrier-neutral facility with diverse fiber provider options.



INAP

INAP is a global colocation company headquartered in Atlanta, GA. INAP has a presence in 21 different cities around the world, offering colocation, cloud, and managed services to each market. The company's focus on the technology, healthcare, financial, online education, and gaming industries has propelled their growth over the last few years. In addition, INAP's focus on low latency/high availability network services provide vertically integrated services to their clients. INAP markets their OpenStack-based AgileCLOUD service as a scalable, high-performance cloud solution for small-to-mid sized companies.

INAP's primary Chicago data center is located inside Digital Realty's 9333 W Grand Avenue facility, while the company also has a presence at 350 East Cermak Road. At 9333 W Grand, INAP offers colocation at up to 20 kW per cabinet.



Digital Crossroads Data Centers

Established in 2018, Digital Crossroads is led by industry veterans Peter Feldman and Tom Dakich and is currently completing DX-1, the first 10 megawatt building on a planned multi-building campus development on the Illinois/Indiana border in Hammond, IN. The location is less then 15 miles from 350 East Cermak, the primary connectivity hub for the Chicago market.

The Digital Crossroads campus is the 77-acre site of the former State Line Electric Generating Facility. DX-1 is a 105,000 SF of data center with ample expansion space. The campus also has a unique and energy efficient lake water cooling system that can scale with the power with an estimated average PUE of 1.18, dual dark fiber networks. The campus plan includes a start-up tech incubator, a greenhouse to serve Purdue University Northwest, and public space along the lakefront. Digital Crossroads offers a competitive tax incentive package from the state of Indiana.

Lincoln Rackhouse

Established in 1965, Lincoln Property Company has focused on managing residential and commercial properties for over 40 years. Upon acquisition of Rackhouse Group in 2010, the newly-created Lincoln Rackhouse division allowed Lincoln Property Company to diversify its professional repertoire to include data center development and construction services for enterprise clients. It is one of the largest real-estate services firms in the United States, and focuses on helping organizations locate, analyze, and secure data center space to meet a variety of professional needs. Lincoln Rackhouse is headquartered in Dallas, Texas.

■ 2Q 2019: Lincoln Rackhouse purchased ByteGrid. The transaction included ByteGrid's CHI-1 data center in Aurora at 4267 Meridian Parkway. Their data center is a carrier-neutral facility with 2.4 MW of commissioned data center capacity and 33,513 SF of commissioned data center space. The UPS redundancy can serve needs of N+1 or 2N, while the cooling systems are configured at 2N. Lincoln Rackhouse has leased the facility to Agile Data Sites, which will operate the data center.

Netrality Properties

Netrality Properties controls carrier hotel assets and operating meet-me-room environments with no monthly cross connect fees in five major U.S. markets.

• September 2019: the company was recently acquired by a unit of Macquarie Infrastructure Partners, the global infrastructure investor, along with company management.

The firm owns and operates 717 South Wells, a carrier hotel in downtown Chicago. The 10-floor building is 100,000 SF and is a prime area for connectivity and home to many of the long-haul providers in the Chicago market.

New Continuum Data Centers

New Continuum Data Centers is a Chicago-based provider that strives to meet the varying needs of their customers by utilizing rich strategic resources and ensuring that customer experience consistently exceeds expectation. Their 2N design and 8MW generator farm support 100% uptime SLA. Continuum Data Centers has cutting edge cooling capabilities that can easily accommodate extremely high density configurations across the data center floor.



The company's 80,000 SF data center at 603 Discovery Drive is located in the DuPage National Technology Park in West Chicago, IL. The facility receives power from separate substations in dual 12 kV feeds. New Continuum has delivered approximately 2 MW of commissioned power and 20,000 SF of commissioned data center space and can grow by an additional 2 MW and 20,000 SF. The data center is configured with 2N redundancy for its utility, UPS, PDU, and rack power infrastructure. New Continuum sells colocation by the third, half, and whole cabinet and will also sell to larger users as well.

CDC 603 is marketed as a high-performance and secure data center that is strategically distant from Chicago's urban core for disaster recovery. It also leverages the diverse, low-latency fiber connections and 24/7 on-site security available from its neighbors in DuPage Park, such as Fermilab (a government-run research lab) and the Chicago Mercantile Exchange.

1Q 2019: New Continuum purchased their Chicago data center, which they previously leased from CenterPoint Properties.

• September 2019: New Continuum was acquired by SBA Communications, a large tower REIT that owns more than 16,000 communications towers across the US.

ServerFarm Realty

ServerFarm Realty is a data center development company located in El Segundo, CA. The company has completed over 1.3 million SF of data center development transactions throughout its history, and currently has locations in Atlanta, Chicago, North Carolina, Philadelphia, Toronto, and Washington State. ServerFarm is backed by its parent company, Red Sea Group, a multi-billion-dollar global real estate developer.

The company's carrier-neutral facility at 840 South Canal in Chicago opened in 2013. Previously a General Electric factory, ServerFarm Realty retrofitted the eight-story building to Tier III standards. The current design can support four 7,500 SF commissioned data center suites per floor, with a total ability to deliver 20 MW of commissioned data center space at full build.

■ 2Q 2018: Server Farm completed a 2 MW expansion at their Chicago data center, and was under construction with the next 2 MW expansion.

Sirius Computer Solutions

Sirius Computer Solutions is a privately-held company that focuses on delivering technology-based business solutions to clients. Sirius currently boasts an excess of 5,000 clients based in the United States, contributing to the company's claim to be one of the largest IT solutions integrators in the US.

■ Q4 2017: the company announced the acquisition of Forsythe Technology and all related assets, with all future operations merged into the Sirius brand.

Sirius currently operates a data center in the Chicago market that seeks to serve data center users that require smaller footprints. Purpose-built on over 14 acres in Elk Grove Village, IL, the Sirius data center at 1441 Touhy Avenue is fed by diverse utility feeds capable of 30 MW of total utility power. Dual underground telecommunications entrances route over a half-dozen top fiber providers into the building for carrier neutrality.

■ 3Q 2016, T5 Data Centers purchased the facility, with Forsythe leasing their existing capacity.

 3Q 2018, IPI purchased the data center from T5, which was then rebranded in 1Q 2019 as Stack Infrastructure.

Stream Data Centers

Stream Data Centers is an expanding U.S. colocation provider with a presence in Dallas, Houston, San Antonio, Denver, Minneapolis, Chicago, and Montreal. They are a privately held company focused on delivering secure and independent data centers for corporate users. Stream's data centers are built to attract users that value private infrastructure in multiple forms—including the physical data hall, UPS, PDU, generator units, equipment yards and office space. Stream Data Center tenants have the opportunity to control their own infrastructure, and their facilities are typically dual fed from two separate substations, delivered with 2N electrical redundancy. The company is headquartered in Dallas.

■ 1Q 2018: Stream purchased a six-acre land site in Elk Grove Village to construct their first Chicago data center. There is an existing 130,000 powered shell on the site, which Stream will improve to offer 15 MW of commissioned power and 70,000 SF of commissioned space. The facility is in close proximity to EdgeConneX and Equinix data centers.



TierPoint

TierPoint is a cloud, colocation, and managed services provider headquartered in St. Louis, MO. The company's national growth strategy is to acquire operators of highly-redundant, carrier-neutral data centers in mostly underserved or secondary markets. TierPoint's largest acquisition to date was the \$575 million purchase of enterprise managed IT services provider Windstream's data center assets in October 2015. The Windstream acquisition increased TierPoint's data center footprint in major U.S. markets and enabled both companies to sell their respective products and services to each other's customers through referrals.

■ 4Q 2015: TierPoint acquired AlteredScale, a colocation, cloud and managed service provider in the Chicago market with a 107,000 SF data center. AlteredScale purchased the building in 2011 and completed extensive renovations on the facility throughout their ownership time period. The building currently offers 19,700 SF of commissioned data center space. TierPoint also has colocation space with Digital Realty in Franklin Park that they are actively marketing.

■ 2Q 2018: TierPoint added Zayo CloudLink to their list of cloud connectivity services.

■ 4Q 2018: TierPoint released their Cloud Connect Express service, providing users with a private, dedicated connections to public cloud services from their data centers.

XO Communications

XO Communications is a nationwide provider of telecommunications, managed network, and IT infrastructure services for both large enterprises and wholesale customers. The company owns a large IP network and operates over 60 data centers in prime metropolitan areas, creating a nationwide footprint for clients wanting low-latency connections and access to cloud-based IT services.

XO operates three colocation data centers in the Chicago market, with a flagship in downtown Chicago on the 2nd floor of the Marquette Building at 140 South Dearborn. The building's infrastructure includes a single ComEd feed that XO leverages to deliver 160 W/SF (4 kW per cabinet). Inside the data center, XO configured the power and cooling infrastructure for N+1 redundancy. XO Communications owns a large IP network and operates over 60 data centers in prime metropolitan areas, creating a nationwide footprint for clients wanting low-latency connections and access to cloud-based IT services.

In the suburb of Oak Brook, XO operates two similarly configured data centers: One on the 1st floor of the 810 Jorie Blvd building and one at 1808 Swift Drive. The latter is leased data center space in a SSAE 16 Type 2-certified Zayo facility that features dual ComEd power feeds along with N+1 redundancy.

zColo

Boulder, CO-based zColo is a carrier-neutral data center provider whose parent company, Zayo, is a publicly traded global provider of bandwidth infrastructure services. zColo's data center footprint of 51 facilities extends to nearly 30 markets worldwide. They also offer their Metro Interconnect Service in 11 major U.S. markets, providing connections to multiple data centers across their network.

■ 2015: the company purchased Latisys, a provider of hybrid Infrastructure-as-a-Service (IaaS) solutions for cloud and colocation customers, for \$675 million.

Because the Chicago area is one of America's fiber backbone hubs with a large Zayo fiber presence, it is home to four zColo data centers. Zayo recently agreed to be acquired by Digital Colony, a data center acquisition vehicle affiliated with Digital Bridge and Colony Capital.





RagingWire / NTT Data Centers

www.ragingwire.com

RagingWire was one of the early companies that helped to build what would one day become a multi-billion dollar global industry—data center colocation.

The RagingWire team set out to design, build and operate world-class, cost-effective data centers in which multiple tenants could have dedicated, secured deployments within a common facility. This model of companies "co-locating" their computing systems in a data center eventually became the data center colocation industry.

Over the years, the RagingWire colocation model has been refined and expanded to deliver large scale, build-to-suit wholesale data center solutions as well as private vaults, dedicated cages, and multi-rack deployments.

The company has 265MW of critical IT load spread across 2 million square feet of data center infrastructure in Ashburn, Virginia; Dallas, Texas; Sacramento and Silicon Valley in Northern California, and Chicago, Illinois, with significant growth plans in these locations and other top North American data center markets.

RagingWire has been owned by NTT since 2014, and has been operating as an independent entity since that time. Now NTT (a \$118 billion, 283,000-employee company) is combining its international colocation data center providers into one new entity. As a part of the Global Data Centers division of NTT, RagingWire is one of the most financially strong data center providers, connecting its clients to one of the largest data center platforms in the world with 145 data centers in 20 countries worldwide. RagingWire is looking forward to doing greater things with intelligent technology solutions for its customers and the communities they serve around the globe.



Methodology

datacenterHawk continuously monitors data center activity for 35 regional markets in North American. Regional markets are placed into one of two categories:

- 1. **Primary** Large markets with multiple colocation and cloud data center facilities
- 2. Secondary Mid-to-small markets with data centers.

We define our market sizes based on the total amount of power and space in the market. The total amount of power and space in each market is calculated by datacenterHawk's team of analysts based on four key attributes:

- ► The amount of commissioned power and space
- The amount of available power and space
- ▶ The amount of under construction power and space
- ▶ The amount of planned power and space

As an example:

- Data Center Provider A builds a 75,000 gross square foot (SF) data center facility, with 3 separate data halls of 1,200 kilowatts (kW) and 10,000 raised floor square feet (RFSF) each.
- Data Center Provider A leases one of the data halls (1,200 kW/10,000 RFSF) to a user, and makes the second data hall (1,200 kW/10,000 RFSF) available by completing construction to be ready to lease the next opportunity.
- The third data hall is in shell condition and therefore considered planned space.

In addition, the datacenterHawk analysis considers that many colocation and cloud providers lease infrastructure from larger data center providers. In our analysis, we count power and space leased from one data center provider to another only once.

As an example:

If the lease completed by Data Center Provider A in the scenario above was completed with Data Center Provider B with the intent to sublease that 1,200 kW/10,000 RFSF to users, the analysis would only include the 1,200 kW and 10,000 RFSF of space one time.

At datacenterHawk, we track these attributes in each market throughout the year and frequently refresh them. By continuously monitoring these attributes, we can calculate a baseline for each market, rate how a market grows relative to their baseline score, and deliver the most current and valuable information needed by our customers.

datacenterHawk has made every attempt to ensure the accuracy and reliability of the information provided. However, the information is provided "as is" without warranty of any kind. datacenterHawk does not accept any responsibility or liability for the accuracy, content, completeness, legality, or reliability of the information provided.