



# Downtown Data Centers: CoreSite Connects Chicago

High efficiency UPS' from Schneider Electric to power CoreSite's purpose-built 18MW facility.



Life Is On







**When your ecosystem of major cloud and IT providers totals more than 775, you stick to what you do best. For CoreSite, this means building and operating enterprise class data centers. The attention to core capabilities is not only reflected in its name, the focus is also evident in the company’s operational track record of eight 9s uptime.**

CoreSite’s national data center platform includes 23 secure, reliable, high-performance, cloud-enabled data centers in eight edge markets across the United States, with a strategy towards creating campuses in major market business districts like Los Angeles, the Bay Area, Denver, Chicago, Boston, New York metro, Washington D.C. and Miami.



These highly interconnected urban assets are connected with either dark fiber or lit solution to a larger, scalable data center footprint. The operational teams consists of all in-house, highly trained technicians who operate under rigid procedures that help deliver CoreSite’s singular record of uptime.

Owning the vast majority of its portfolio gives CoreSite full operational, design and infrastructure control to best serve its customers and ensure high security. The company leverages its diverse customer base to provide specific technology services and solutions to enterprise customers.

“Enterprises can leverage a combination of cloud platforms, network solutions and managed service providers to facilitate their businesses,” says Matt Gleason, Vice President and General Manager for CoreSite Northeast. “It’s like a shopping mall experience for our customers.”

Amazon Web Services, Microsoft ExpressRoute, Google Cloud Platform and Oracle Cloud, among other cloud offerings are all available within CoreSite data centers, through fiber direct connections or The CoreSite Open Cloud Exchange® — the company’s one-to-many cloud aggregation solution that allows customers “to get the best of all worlds,” according to Gleason.



## Chicago CH1 & CH2: One of the Most Connected Buildings to the First of its Kind

With more than 40 networks inside, CoreSite's 427 South LaSalle facility (CH1) in Chicago is considered the second most connected building in the city. The company also recently opened its CH2 building nearby and connected the two locations with diverse dark fiber routes. The addition of CH2 increases CoreSite's market capacity by 169,000 square feet of IT power built out in six-megawatt chunks.

Gleason says the "beauty of this model" is that access is bi-directional. Customers can leverage the established ecosystem from CH1 in CH2. Some carriers are also available separately in CH2, so "you get the best of both facilities." The downtown location and interconnection points provide lower latency and cost to large enterprises in the vicinity.

## Designing for Density and Power

Overall, according to Gleason, customers across markets and industries are growing in density. "Most of our leases are three to five years, so we need to be able to support customers through multiple iterations. What we're building today will meet their longer term needs, as they revamp their infrastructures, which get denser and denser while power per square foot increases," he says. "Today, we can support 17 kilowatts per cabinet without many modifications against the relative industry standard of around five or six kilowatts per cabinet. With some cooling modifications, we can support upwards of 30 kilowatts a cabinet."



The electrical distribution system design is primarily focused around concurrent maintainability, i.e., maintaining power delivery paths to the customer during maintenance activities. "We are running paralleled generators — what we call the ring bus — divided into two generator segments. We always maintain adequate gens in case a section ever needs to be taken down

for maintenance or repair," says Andrew Sall, CoreSite's Vice President of Engineering.



"We'll enable high-density deployments for our customers in a purpose-built data center — the first one of its kind in downtown Chicago. Every other downtown Chicago data center, including CH1, is a repurposed building. CH2 is the first built from the ground up," explains Gleason. "This makes Chicago a little different from the rest of the market in that CH2 isn't out in the suburbs. It's blocks away from CH1, future-proofed today for growing densities and tomorrow's designs."

— Matt Gleason, V.P., General Manager  
CoreSite Northeast



Medium voltage unit substations are downstream and ultimately feed unit substations powering UPSes and ancillary loads, such as computer room air handlers and the chiller plant respectively. From there, the facility supports a PDU on the floor that's tied back to a maintenance UPS. The primary UPS configuration is distributed-redundant; i.e., four to make three, meaning four UPS' are feeding the load and any one grouping could be lost and still support the full IT load on the raised floor.

During scheduled or unscheduled maintenance activities, the maintenance UPS is utilized so a UPS lineup can be fully shut down with no degradation in service. Sall continues, "We utilize 2N distribution on the raised floor using a step-down transformer PDU product. Power is distributed either via remote power panels or whatever solution the customer requests. Typically, our standard product is RPP, but we've done busway and other variable solutions as well."

When it comes to cooling an N+1 chiller plant, a highly available and highly efficient system has been implemented. With a few CoreSite directed modifications to best utilize partial free cooling from the plate frame heat exchanger, Sall says a majority of the year will feature partial free cooling. Chilled water is fed to the computer room air handlers via a looped piping configuration, which can be isolated and segmented.

"We're driving towards the most efficient building that we can produce in this area," he explains.



### High Efficiency UPS' from Schneider Electric

For maximum operational capacity at very high efficiency, CoreSite chose Schneider Electric's UPS GVX series with lithium-ion solution. "What ultimately drove us to this choice," according to Sall, "is the total cost of ownership of the UPS. We considered not just the upfront capex purchase price, maintenance or replacement cycle time, but the overall life expectancy. When we design our facilities, we take this into account as we look to drive down the cost in the overall structure in the supporting systems. The Schneider Galaxy product line paired with the lithium-ion has a very high efficiency."

He says that components are easily accessible, which makes the equipment easy to maintain for minimal downtime. Though, with the maintenance UPS as backup, CoreSite always maintains a full level of redundancy. With VRLA and other lead acid batteries, Sall believes the typical replacement time is about five years on average. CoreSite expects that the lithium-ion powered UPS' will last about 15 years with minimum degradation in service over that lifetime.

"We looked for a provider to partner with us that could support our review and analysis of shifting to a lithium-ion product line, and Schneider Electric was able to do so," he says. "They helped us understand more about capacity, limitations and what it really means to use lithium-ion in conjunction with their Galaxy GVX product line."

CoreSite CH2 is open and operational as of June 2020