

Aligned Ashburn Data Center Campus

Velocity Is in Our DNA and in Ashburn, We Delivered

CASE STUDY



Fastest Building Permit-to-Vertical Construction in the History of Ashburn's Critical Infrastructure

Ashburn, Virginia, located approximately 30 minutes from the U.S. capital, is the largest data center market in North America. Aligned sought to build a new flagship data center campus in Ashburn that would address the needs of hyperscalers, Platform-as-a-Service (PaaS) and cloud service providers that demand a highly dynamic, scalable, and future-proof data center solution. Leveraging a standardized supply chain methodology; an inventory of proprietary prefabricated, factory-built and tested power and cooling equipment; and best-in-class partners, Aligned constructed a 368,755 square-foot data center and built out the first fully-commissioned 12 MW of data center space, expandable to 60 MW, in less than six months. This accomplishment is the fastest building permit-to-vertical construction timeline in the history of critical infrastructure in Ashburn.

When complete, the 26-acre, 180 MW master-planned data center campus will offer over 1 mm sq. ft. of space, ultimately drawing redundant, critical power from two diverse 230kV Dominion substations. Aligned's adaptive data center will meet the growing need for high-density, highly efficient and scalable colocation solutions in Ashburn.

BACKGROUND

Why Aligned Is Making History in Ashburn

With the world's largest concentration of cloud computing infrastructure, Northern Virginia has been referred to as "Data Center Alley" and the "Home of the Hyperscalers." For hyperscalers, cloud and PaaS providers, Ashburn, the largest data center market in North America, continues to be the top choice for data center facilities due to its proximity to major population centers, abundant fiber, affordable and reliable power, and favorable tax incentives. The region has long been a strategic priority for Amazon Web Services (AWS), Facebook, Google, Microsoft, Oracle, and Salesforce, as well as data-driven companies such as Uber, LinkedIn, and Dropbox.

To look at Ashburn, Virginia, and its desirability as a location for Aligned's flagship data center campus is to anticipate how the history of the Fourth Industrial Revolution will one day be written. Yes, it will document many technological milestones such as the internet, the PC, data centers and cloud computing. However, it will also be highlighted by some very specific places that even today are among the most significant plots of land on the planet. Among these, Ashburn.

A Brief History of the Internet

After Congress passed the High-Performance Computing Act of 1991 (HPCA), early pioneers took the initiative to connect their networks together to create the internetwork architecture we now know as the internet. The first place this connection point happened, allowing traffic to flow from more providers' infrastructure to the other, was a small office in Tysons Corner, VA. This first Internet Exchange Point (IXP), called MAE-East, soon outgrew the office space as well as its overflow – a converted parking garage, and was relocated to UUNET's newly built Ashburn campus. This 590 acres of freshly developed Northern Virginia farmland soon became the most connected place on the planet, the largest Point of Presence (PoP) and internet on-ramp connecting the U.S. to EMEA, and with it, the catalyst for growth and investment in Loudoun County. Now known as "Data Center Alley," Loudoun is host to 10 million square feet of data centers through which it is estimated that 70 percent of the world's internet traffic passes.

“...less than 800 feet from the original UUNET-managed MAE-East Exchange...”

In purchasing and locating its new flagship Ashburn data center campus less than 800 feet from the original UUNET-managed MAE-East Exchange, Aligned is at once becoming part of, and making, history. At a time when humankind is embarking upon the Fourth Industrial Revolution, Aligned's data center campus will help service the exponential demands of our increasingly connected civilization – now and well into the future.

Concept to Commissioning - In Record Time

CHALLENGES

Building Data Center Capacity Where and When It's Needed

Speed-to-market, flexibility, scalability, reliability, and predictability have become business-critical success factors for hyperscalers, cloud and platform providers looking to expand into new or existing markets. These organizations, along with enterprises deploying high-density compute, very often require large-scale infrastructure deployments delivered against rigorous and exacting timelines. Building for an unprecedented demand curve, with a focus on cost, sustainability and the requirement to scale as needed without stranding capital, these highly sophisticated customers are looking for a data center partner who not only shares their corporate ethos, but can deliver against an accelerated timeline.

SOLUTION

Laser-Focused on Velocity of Delivery

VSAS™ – Velocity, Scalability, Adaptability, and Sustainability – is a term that encompasses:



- Aligned's advanced, standardized supply chain methodology that streamlines delivery;
- Its patented Delta³ cooling technology that enables scale and efficiency without added CapEx
- An intelligent and adaptable infrastructure that allows customers to truly future-proof their IT environments

- A platform that is focused on helping companies deliver greater business value with less costly energy and infrastructure resources

Through its leadership team and their experience on major projects globally, velocity of delivery is something that Aligned has been working on for more than two decades. With over \$7.5 billion of data center projects delivered by its management team and some of the most efficient and innovative designs, the Aligned leadership team leverages all the best-of-breed methodologies to accelerate the construction and delivery of a premium data center at an efficient price point.

Aligned provides hyperscale, cloud and platform providers with a simple and repeatable model for expansion in new or existing markets. Its unique funding model and long-range commitments have secured pre-allocated manufacturing cycles with industry-leading infrastructure partners to create a rolling 50 MW pool of dedicated inventory. This pool feeds into Aligned's patented, revolutionary, factory-based construction of mechanical and electrical plant modular containers. Pre-certified by Underwriters Laboratory (UL), these modules are then deployed and delivered, enabling accelerated scalability and commissioning at timeframes never before seen in the data center critical infrastructure business.

Aligned's award-winning, patented cooling technology, Delta Cube (Delta³), allows customers to deploy infrastructure where and when they need it – and reconfigure quickly and seamlessly, and usually within the same footprint – as their requirements change. With Delta³, workload densities can scale in place without having to reconfigure existing infrastructure, disperse equipment, or require large-scale investments to augment floors for increasing heat loads. Customers can initiate at one density profile and scale up to 50 kW per rack without disruption, all while maintaining industry-leading Power Usage Effectiveness (PUE). Delta³ utilizes up to 80% less energy and 85% less water to reduce resource usage.

Combined with Aligned's CACTUS® unit, an air-cooled adiabatic assisted cooling system, this cooling solution delivers efficiency at any load, in any climate, and regardless of location to support companies' sustainability goals.



ADAPTABLE

Aligned's adaptable, intelligent and dynamic infrastructure encompasses its patented data center cooling technology. Delta³ is purpose-built to support high, mixed, and variable power densities of 1-50kW per cabinet in the same footprint.



SCALABLE

With Delta³, workload densities can scale in place without having to reconfigure existing infrastructure, disperse equipment, or require large-scale investments. Customers can initiate at one density profile and scale up to 50 kW per rack without disruption, all while maintaining industry-leading PUE.



SUSTAINABLE

Aligned offers multiple alternative electricity / renewable energy options at each of our data center locations. Our patented cooling technology, Delta Cube, is ultra-efficient and sustainable. It supports standard and high power densities and offers an industry-leading 1.15 PUE. Delta Cube provides 350 kW of heat rejection in just four feet, compared to 38 feet of traditional Computer Room Air Conditioning (CRAC) units.



| RESULTS

Building Permit to Fully Commissioned in Less Than Six Months

To support the IT operations of hyperscale, platform and cloud service provider customers, Aligned is developing a new 26-acre, 180 MW master-planned data center campus in Ashburn, Virginia. Leveraging its standardized supply chain methodology, an inventory of prefabricated, factory-built and tested power and cooling equipment, and best-of-breed partners, Aligned has constructed a 368,000 square-foot data hall and built out the first 12MW of data center space, expandable to 80 MW, in less than six months. When complete, the campus will offer over 1 mm sq. ft. of space, ultimately drawing redundant, critical power from two diverse 230kV Dominion substation.

Once the initial build was finalized, there was no drywall used during construction. This is significant for worksite safety because drywall installers are commonly at risk for back injuries, falls and respiratory exposure to dust, including silica. In fact, due to Aligned's pre-programmed design, which allows for scale-in-place density up to 1000W per square-foot, the company was able to achieve the highest industry safety standards concerning dust and particulate matter.

In order to begin construction of the building, Aligned had to first relocate critical utility and private power feeds. Additionally, critical water and gas utility sources had to be relocated to begin construction of the infrastructure yard, which will provide space for CACTUS® cooling system units and back-up generators.

The campus' initial 368,755-square-foot, 60 MW facility, followed by a 409,000-square-foot, 120 MW development, will sit atop major fiber and conduit routes, providing access to more than 50 carriers in the immediate area. Both facilities will feature Aligned's on-demand adaptable and intelligent, dynamic infrastructure, complete with its patented, award-winning data center cooling technology, which is purpose-built to support high, mixed, and variable power densities of 1-50kW per cabinet in the same footprint.

Aligned's new Ashburn data center campus addresses the needs of hyperscalers, cloud and platform providers that demand a highly dynamic, scalable and future-proof data center solution in the country's largest data center market.

"Accomplishing the fastest building permit-to-vertical construction timeline in the history of critical infrastructure in Ashburn is proof positive of Aligned's commitment to velocity of delivery"

| ABOUT ALIGNED

Aligned is an infrastructure technology company that offers adaptable colocation and build-to-scale solutions to cloud, enterprise, and managed service providers. Our intelligent infrastructure allows densification and vertical growth within the same footprint, enabling customers to scale up without disruption, all while maintaining industry-leading Power Usage Effectiveness (PUE). By reducing the energy, water and space needed to operate, our data center solutions, combined with our patented cooling technology, offer businesses a competitive advantage by improving reliability and their bottom line. For more information, visit www.alignedenergy.com and connect with us on [Twitter](#), [LinkedIn](#) and [Facebook](#).

About Macquarie and the Green Investments Group

Aligned received a strategic investment from Macquarie Infrastructure Partners, an investment fund managed by Macquarie Infrastructure and Real Assets (MIRA). MIRA is a division of Macquarie Asset Management, the asset management arm of Macquarie Group, a diversified financial group providing clients with asset management, banking, advisory and risk and capital solutions across debt, equity and commodities. As of its most recent reporting date (March 31, 2018), MIRA had assets under management of ~\$US119 billion invested in ~148 portfolio businesses, ~300 properties and ~4.5 million hectares of farmland, including ~5GW of renewable power generation projects. Macquarie is one of the founding members of the Climate Finance Leadership Initiative (CFLI), convening six influential financial sector leaders to help facilitate the private financing objectives included in the landmark Paris Agreement. Macquarie CEO Shemara Wikramanayake is also a founding commissioner of the UN's Global Commission on Adaptation. In April 2017, a Macquarie-led consortium invested in the Green Investment Bank creating one of Europe's largest teams of green energy investment specialists.

To learn more about Aligned and its colocation and build-to-scale solutions for hyperscalers, cloud and platform providers, visit www.alignedenergy.com or email sales@alignedenergy.com.