



VERTIV WHITE PAPER

Increase Infrastructure Agility by Deploying Vertiv™ MegaMod™

Prefabricated Modular Data Centers Improve
Business Responsiveness, Enabling Faster Growth

The publication of the Agile Manifesto more than 20 years ago introduced the world to the concept of technology agility. Instead of using waterfall-style processes to build monolithic business applications, IT teams could now use iterative processes to develop and release code that delivered rapid and ongoing business value. Agile development processes have enabled organizations around the world to become more innovative: deploying new capabilities at pace, while reducing cost and risk. Using the Agile methodology has now become the preferred way to develop software. Nearly three in four (71 percent) of U.S. companies use Agile processes, which are 1.5X more successful than waterfall development processes.

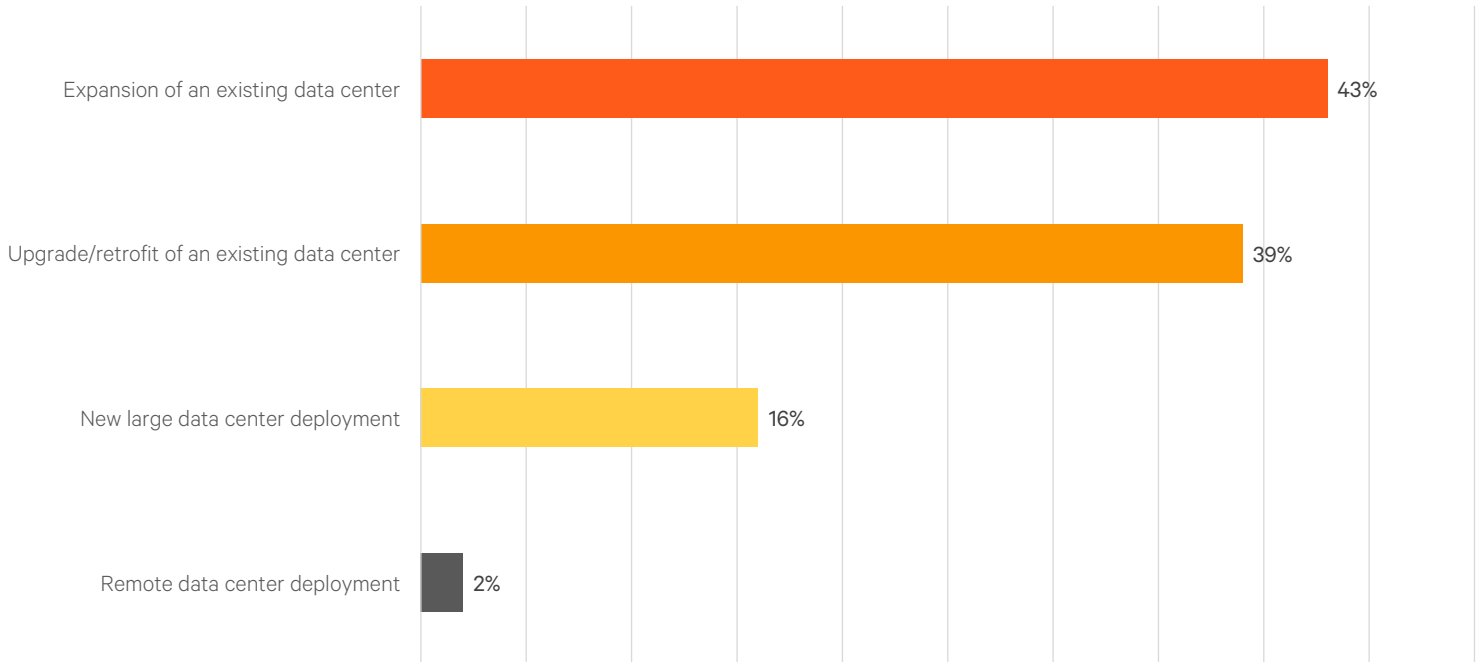
The concept of corporate agility, or being able to anticipate and swiftly respond to business trends, began gaining popularity with the rise of cloud infrastructure, real-time analytics, and automated processes. These tools, coupled with strategically placed investments, enable organizations to develop customer-aligned products and services, drive more revenues, and increase profitability. Corporate agility became even more important during the pandemic, as complex issues, such as hybrid workforce enablement, supply chain shortages, fast-changing consumer demand, and geopolitical developments moved corporate decision making into real-time. Now, there's no turning back.

Organizations have created software infrastructure agility to become more flexible and responsive to market dynamics. They've adopted software-defined networking, replaced hardware with virtualized assets, and leveraged cloud services to grow faster. Now, they're extending infrastructure agility to physical assets, trading brick-and-mortar construction of data centers for prefabricated modular data centers (PMDCs).

PMDCs Will Become the New Deployment Model for Data Centers

Prefabricated modular data centers are fast to deploy and efficient to operate. According to Omdia research, a growing number of IT leaders have already deployed a PMDC to expand or upgrade an existing data center or achieve other goals:²

What are prefabricated modular data centers best suited for?



¹ Jack Flynn, "16 Amazing Agile Statistics [2022]: What Companies Use Agile Methodology," blog, Zippia, November 27, 2022, <https://www.zippia.com/advice/agile-statistics/#>

² "New Research Highlights Benefits of Prefabricated Modular Data Centers," blog, Vertiv, September 27, 2022,

<https://www.vertiv.com/en-emea/about/news-and-insights/articles/blog-posts/new-research-highlights-benefits-of-prefabricated-modular-data-centers/>

Why IT Leaders Should Take an Agile Approach to Deploying Data Centers

So, what does physical infrastructure agility enable organizations to accomplish? Interestingly, IT leaders are focused on achieving many of the same goals with physical assets that they're accomplishing with digital ones.



Vertiv™ MegaMod™ is a global, standardized PFMDC solution that organizations can use to deploy new data center capacity at pace, while reaping other business advantages.

Increasing business responsiveness:

CIOs and IT teams want to match IT strategies to corporate goals, such as digitizing the business, delivering a better digital experience to customer and employees, and optimizing operations.

In many cases, this means expanding or modernizing existing data center assets to handle more workloads. Alternatively, it can mean deploying capacity when and where it's needed – in a more agile manner. Organizations often don't have the up to 20 months it takes to build and outfit white space data centers – and that timeframe doesn't include land purchasing and acquiring permits. Waiting this long may mean missing on the opportunity to grow the business and losing customers to a nimbler competitor.

Prefabricated modular data centers (PMDCs) are purpose-built in state-of-the-art manufacturing plants. Because development processes and equipment are highly standardized and processes are executed in parallel, PMDCs can be deployed in 8-10 months, or 30 to 50

percent faster than many stick-built facilities.

Vertiv™ MegaMod™ is a high-quality modular data center manufactured in Europe. Our team of skilled engineers includes advanced designers and supervisors who oversee fast-paced development work and ensure alignment to quality engineering and manufacturing standards.

Matching capacity to current needs:

It costs between \$600 to \$1,100 per gross square foot or \$7 million to \$12 million per megawatt of commissioned IT load to build a data center.⁴ And what is less agile than investing in huge Capex projects with long timeframes?

Hyperscalers, cloud service providers, colocation and managed service providers, telecommunications firms, and others obviously need to deploy state-of-the-art facilities to service large customer bases and provide services with dynamic scale. However, there are many situations where less capacity is needed.

Organizations, including these cloud leaders, may want to extend the life of brick-and-mortar facilities by adding new capacity, deploy smaller-scale data centers close to customers, stand up IT processing capabilities to support new businesses, or achieve other aims.

Vertiv MegaMod is available in units of 0.5-1 MW of power capacity and can be easily scaled to support a larger (2 MW or even higher) IT load in a single location. As a result, organizations can add capacity in an agile way as demand increases, without requiring large upfront Capex outlays.

Organizations can further increase agility by using Vertiv MegaMod as a plug-and-play solution for specific use cases, such as edge sites, where local capacity is

needed to process data and deliver digital services. By standardizing their approach, organizations can use consistent processes to purchase, deploy, monitor, and manage modular data centers wherever they are located.

IT teams can also opt to have a SCADA-based Building Monitoring System (BMS) integrated into their Vertiv MegaMod solution, to enable remote monitoring and visualization of critical infrastructure. This is especially important at edge sites, which are often remote and unstaffed. Teams can use BMS insights to identify issues and make ongoing operational improvements, ensuring their PMDCs perform at peak levels.

Overcoming local skill shortages:

Constructing data centers requires that organizations contract with partners, who provide workers with expertise in skills ranging from construction; to white-space and power room design; to selection, deployment, and turn-on of IT, power, and cooling equipment. In this manner, data center construction is akin to waterfall IT development processes, which increase risks by using large teams and sequential processes to build new capabilities.

Certain markets may lack workers who possess all of these skills and importing teams to execute data center initiatives can be incredibly costly. Instead, organizations can opt to deploy PMDCs that can be built, shipped to their desired location, and then installed and commissioned by local partners, reducing talent availability risks.

Vertiv MegaMod is a standardized solution that is developed by teams who use well-honed design and manufacturing processes to ensure consistency and quality across every build, much like Agile teams do using scrums.

³ "Prefabricated Data Center," brochure, Vertiv, undated, <https://www.vertiv.com/4a7618/globalassets/shared/vertiv-prefabricated-data-center-brochure.pdf>

⁴ Mary Zhang, "How Much Does it Cost to Build a Data Center?" blog, Dgtl Infra Real Estate 2.0, May 30, 2022, <https://dgtlinfra.com/how-much-does-it-cost-to-build-a-data-center/>

Vertiv™ MegaMod™ can be modified to meet local site requirements and regional engineering standards, shipped to any location, and deployed by Vertiv teams or a trusted partner in our service network. Further, buyers can opt to integrate remote monitoring capabilities which help them optimize asset performance and deliver high uptime. When organization network operations center (NOC) engineers detect potential critical conditions, they can automatically dispatch field engineers. With remote insights, field experts are often able to diagnose issues before arriving and bring required replacement parts, accelerating the path to equipment recovery.

Reducing risks: Agile teams look for ways to identify and reduce risks. Daily standups and constant feedback loops help teams maintain alignment with business requirements and mitigate risks as they execute.

In the data center industry, owners and operators are dealing with increased risk due to supply chain issues. These leaders need IT, power, and cooling equipment to be installed at data centers before they can turn on new capacity. Since equipment is sourced from multiple vendors, product out-of-stocks and logistics delays can result in significant project setbacks.

While no manufacturer is completely immune from supply chain issues, Vertiv uses multiple strategies to minimize supply chain impacts on its customers. We maintain tight control over design and manufacturing processes, use our own equipment in Vertiv MegaMod, and work with trusted suppliers who deliver components on reliable and predictable basis.

Vertiv critical power, cooling, and remote monitoring solutions set a standard for our industry, helping organizations architect data center continuity. In addition, our research team is constantly exploring and testing new technologies. By bringing these new capabilities to our customers, we help them improve operational performance proactively.

Achieving sustainability goals: Data center owners and operators have set ambitious targets, such as achieving carbon net zero status by 2030 or 2050. Amazon, Google, and Microsoft are among those racing to achieve net-zero emissions. These companies are driven both by corporate values and business considerations. Gartner states that carbon emissions will be one of the top-three factors that companies consider by 2025 as they purchase cloud services from hyperscalers.⁵ Similarly, many IT teams are reconsidering physical infrastructure choices to see

how they can reduce carbon emissions by deploying advanced technology and increasing energy efficiency.

When IT teams choose scalable modular data centers, they can deploy only the capacity they need at that moment. That means there's no need to power and cool idle IT capacity, making PMDCs a more sustainable choice than large-scale data centers for many applications.

Increase Agility with Vertiv MegaMod This Year: The modular data industry is expected to grow from \$18.2 billion in 2021 to \$38.27 billion by 2027,⁶ as buyers choose certainty, standardization, speed, and lower costs over committing to Capex-intensive stick-built facilities with longer deployment timeframes.

Omdia research predicts that PMDCs will become the dominant deployment model, with 93 percent of data center professionals saying they will use it as their default construction process. Already, more than half (52 percent) have already deployed these integrated solutions.⁷

Organizations that choose Vertiv MegaMod obtain a fully integrated solution that they can deploy anywhere and maintain using remote monitoring services. Buyers gain the peace of mind of using a pre-engineered solution that is designed to meet data center requirements and manufactured by expert teams using quality standards and best practices. Standardization creates higher quality and predictability across manufacturing processes, while also simplifying installation, commissioning, maintenance, management, and monitoring processes. Customer can opt to deploy Vertiv MegaMod as a standardized solution across sites or customize it to meet local and regional requirements.

Vertiv MegaMod has integrated best-in-class IT, power, cooling, and remote monitoring technology; can be deployed rapidly to meet emerging business needs; and can be scaled and evolved to match pace with growth. Buyers benefit by buying only the capacity they need, reducing Capex expenditures; minimizing local skills requirements for deployments; reducing project risk; and only powering and cooling active compute, decreasing use of utility services.

Speed is everything in today's market. Organizations can use Vertiv MegaMod to move faster and achieve more strategic goals.

Learn more about Vertiv MegaMod.

⁵ "Gartner Predicts Hyperscalers' Carbon Emissions Will Drive Cloud Purchase Decisions by 2025," Gartner, press release, January 1, 2024, <https://www.gartner.com/en/newsroom/press-releases/2022-01-24-gartner-predicts-hyperscalers-carbon-emissions-will-drive-cloud-purchase-decisions-by-2025>

⁶ "Modular Data Center Market to Reach \$38.27 Billion by 2027. Adoption of Functional Modules Leading the Market Growth – Arizton," report press release, July 18, 2022, <https://www.globenewswire.com/news-release/2022/07/18/2481320/0/en/Modular-Data-Center-Market-to-Reach-38-27-Billion-by-2027-Adoption-of-Functional-Modules-Leading-the-Market-Growth-Arizton.html>

⁷ "New Research Highlights Benefits," Vertiv, *ibid.*



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