# Colocation Data Center Market Prospectus 2022

Observations and Predictions from Industry Experts

# Skilled Labor, Supply Chains, and Other Factors Impacting Colocation Data Center Providers' Need for Speed

After a year defined by a pandemic that upended nearly all aspects of daily life, many were hopeful 2021 would provide a sense of normalcy. The rollout of the COVID-19 vaccine helped, but it has become clear the pandemic triggered an irreversible change in all walks of life, including the technology sector. Behavioral changes associated with the pandemic such as remote work, online schooling, e-commerce, and the increased use of gaming and video streaming services will no longer be seen as short-term trends, but the new normal.

While the pandemic has obviously taken a terrible toll on society, it has also led to some changes that could be seen as positive. For example, the combined reduction in air travel and focus on remote meetings has had environmental benefits. Related to this broader push towards digitalization, increased reliance on computing has created massive opportunities for the technology industry. Companies must move quickly to scale their computing power and increase the resiliency and connectivity of their data centers. The resulting data center construction boom has led our experts to believe 2022 will not be a bounce-back year, but rather a "bounce forward" year.

As organizations seek alternatives to their existing network architecture, colocation data centers are an increasingly popular option, particularly for a number of major hyperscalers, including Alibaba, Amazon Web Services (AWS), Google, Meta, and Microsoft. According to Gartner, a leading global research and advisory firm for the IT industry, colocation data centers offer "higher availability, reliability, certified building tier levels, energy efficiency, dedicated facilities management, and the ability to scale."

The speed and costs associated with building colocation data centers and bringing them online have made them particularly attractive for cloud providers and other hyperscalers trying to meet increasing data demands. The resulting growth opportunities for colocation providers span nearly all corners of the globe. Outside of the major European data center hubs (Frankfurt, London, Amsterdam, Paris, and Dublin), secondary cities like Milan, Warsaw, and Vienna are becoming larger players in the market. In the Asia-Pacific region, there is a large influx of data center investment in nearly all countries. The same can be said about other "emerging" markets like the Middle East and Africa.

This urgent appetite for data center capacity is not without its set of challenges. Several countries across the globe, like Ireland and the United States, are dealing with public pushback regarding energy concerns related to data center construction and operation.

Additionally, this period of immense growth is happening at a time when industries across all sectors are battling unprecedented supply chain issues that seem likely to drag into 2023 and beyond. These supply chain woes are coupled with a worldwide shortage of skilled labor. The lack of project managers, engineers, and other skilled labor forces will likely lead to higher demand for prefabricated, modular data center solutions, which can be deployed quickly and reduce complexity. There is also likely to be higher demand for remote monitoring, which enables centralized control of an entire network and multiple facilities.

This prospectus examines these trends, issues, and other findings with the help of Vertiv's experts from around the world.

**Prospectus Contributors:**

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## Rise of European Gigawatt Data Centers

Of the leading gigawatt markets, which account for 56% of live IT power, Amsterdam was the busier in 2020 with 166 megawatts of capacity sold (133 MW in Q4). London was not far behind with 144 MW (25 MW in Q4), followed by Frankfurt with 115 MW (9 MW in Q4); Dublin at 11 MW; and Paris with 68 MW (35 MW in Q4).
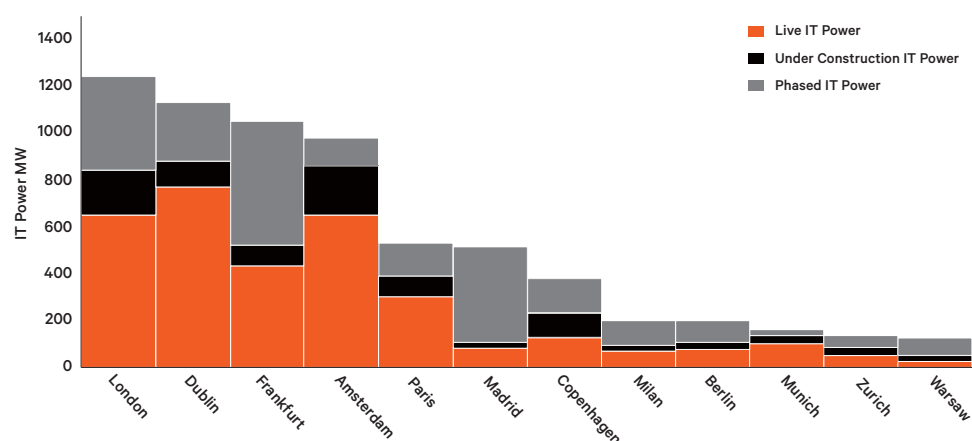


*Source: [Knight Frank, The Data Centre Report, EMEA & APAC, Q4 2020](#)*

## Q: What are some of the most recent changes we're seeing in the colocation data center landscape?

In the last [prospectus](#), Vertiv's experts opined that the data center would soon be seen as another utility with all the responsibilities that entails. Given the current state of demand for remote work, online schooling, telehealth, and other essential services, this has undoubtedly become the case.

According to 451 Research, there are roughly 1,600 companies providing colocation services worldwide, and our experts expect to see a pattern of partnerships turning into acquisitions between the smaller colocation providers and the industry's major players.

Europe has long been one of the world's most established data center markets with many of its sites concentrated in Frankfurt, London, Amsterdam, Paris and Dublin (FLAPD). But in the global race to attract hyperscale data centers, our experts have seen recent growth in secondary European cities, including Madrid, Milan, Vienna and Warsaw. Thanks to more stringent regulations, Europe has always been ahead of the curve when it comes to sustainability and renewable energy, but like the rest of the world, the region is facing labor shortages and project delays. In cities like Dublin and Frankfurt, there have also been more crackdowns on data center sound pollution.

In the Asia-Pacific region, colocation is the most important data center sector in the region, according to Vertiv's Tony Gaunt, vice president, colocation and hyperscale, ANZ, SEA & India. The current presence of self-built data centers by hyperscalers is relatively small, compared to other regions. Instead, those hyperscale providers are leveraging colocation data centers that have presence, expertise, and cable connectivity. One of the leaders in this space is AirTrunk, which was [recently acquired](#) for nearly $2 billion and just announced plans for a new 320 MW hyperscale data center in Sydney.

### Key Findings

- The increased reliance on computing to support remote work, online schooling, telehealth, and other services has led to unprecedented worldwide growth for the colocation data center market, including colocation at the edge of the network.

- Much of the colocation data center market growth in regions like Asia Pacific and Europe, Middle East, and Africa (EMEA) will be done to attract and support major hyperscalers, including Alibaba, Amazon Web Services, Google, and Microsoft.

- To meet scale and capacity demands in emerging areas with shortages of local labor and expertise, builders of colocation data centers will need to consider all construction methods, including prefabricated and modular solutions.

- Speed and cost are the biggest drivers for colocation providers, but experts expect many will make data center sustainability a higher priority in order to attract hyperscalers with strong environmental, social, and governance (ESG) initiatives.

- Global supply chain issues and a lack of skilled project managers, engineers, designers, and other labor forces will be significant challenges for companies trying to build colocation data centers rapidly to meet escalating customer demands.

The addition of subsea cable stations makes the Philippines an emerging player in the region. In addition to the expansion of Indonesia and Taiwan, Vietnam is expected to grow about 15% each year through 2026. Thailand is developing domestically and as a gateway hub for other growing markets, such as Cambodia. India has projections to double its growth from 499 MW in 2021 to 1,008 MW in 2023.

Significant colocation data center growth is happening in Africa and the Middle East as well. According to Pierre Havenga, managing director for the Middle East and Africa, countries like the United Arab Emirates, Saudi Arabia, and Qatar are seeing tremendous expansion in the colocation market with potential deals for 30-40 MW data centers on the horizon. Africa's low-level connectivity and smaller user base has not made it attractive for large hyperscale data center builds, but as connectivity increases, there is opportunity for colocation providers.

Big players like Vantage Data Centers are expanding into South Africa and other major colocation providers such as Africa Data Centers are expanding into Nigeria and considering Egypt and Morocco as their next locations.

We also see an increase in acquisition activities from large global players into Africa. Equinix acquired MainOne and Digital Realty acquired Medalion in Nigeria and lately took a 55% stake in Teraco in South Africa. One factor that could lead to massive growth in Africa is the passing of various data privacy acts that will protect personal data and help thwart cybersecurity threats. The legislation will allow more countries to manage their data within the continent.

In North America, the data center market growth is driven by the primary markets of northern Virginia, Dallas, Chicago, and the Silicon Valley region in California, as well as New York and Atlanta. Total capacity of these primary markets exceeded 3 gigawatts in 2021. More than half a gigawatt is still under construction, and nearly half of that capacity is located in northern Virginia, the world's largest data center market.

> *Hyperscalers typically don't have the immediate access to in-country local staff to design and construct data centers in these developing regions. Leaning on colos is the fastest and easiest way to meet demand because they have the in-country expertise and know-how to build for those customers.*
>
> — Tony Gaunt, Vice President, Colocation and Hyperscale, ANZ, SEA & India

## Philippines Subsea Cable Systems

By 2024, there will be seven trans-pacific subsea cables connecting the Philippines to the United States, including Asia-America Gateway (AAG), Guam-Philippines, SEA-US, Jupiter, PLCN, CAP-1 and Bifrost. AAG is 20,000 kilometers and the first submarine cable system linking South East Asia directly with the U.S., providing connectivity between Malaysia, Singapore, Thailand, Brunei Darussalam, Vietnam, Hong Kong SAR, Philippines, Guam, Hawaii and the U.S. West Coast.
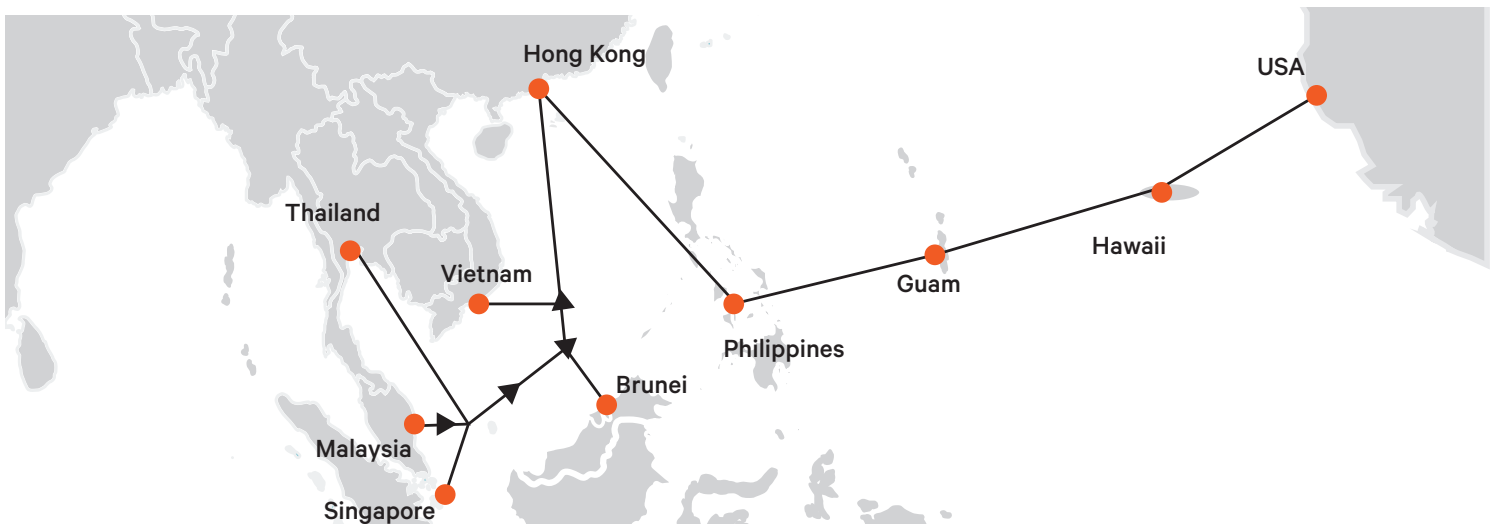


*Source: Submarine Cable Networks*

## Q: How are colocation data centers capable of meeting the speed and cost demands we're seeing in the market?

More developers today are normalizing their designs and equipment with increasing value being placed on the repeatability and reliability of prefabricated modular data centers. This approach allows them to quickly add capacity to meet demand without overprovisioning. It shortens the time of a data center build, offers schedule reliability, ensures a higher level of quality control, and helps address the industry's labor shortage. It also provides more consistency and control of operating and capital costs.

"With a modular data center, there is the potential of a 'rinse and repeat' solution," Gaunt says. "For areas that don't have data center build or design expertise, that repeatability and consistency are paramount."

## Q: How are global supply chain issues affecting the colocation data center market?

The pandemic is compounding the problem, reducing the number of available workers, and limiting travel, making it increasingly difficult for data center builders to meet project deadlines and budgets. Major shortages in key electronics, base metals, and plastic resins remain, and the industry is also experiencing last-minute supplier decommitments for parts like compressors and switches. Those shortages hinder builders' ability to accurately predict delivery times. And it's not just delays affecting projects. Container costs and air freight have reached record highs.

## Q: How can colocation data centers and critical infrastructure providers mitigate the effects of supply chain issues?

In the midst of these delays and price increases, many colocation providers are eager to lock in capacity and price for upcoming projects as soon as possible. For providers who might grow impatient with project delays or become frustrated with rising costs, Vertiv's Pierre Havenga warns, "Do not sacrifice quality with your specifications, or you will pay the price in the future."

To help mitigate the strain, suppliers have no choice but to increase costs and extend lead times. According to Gaunt, suppliers are spending millions on premium freight and surcharges to secure capacity and meet customer expectations. Additionally, the companies providing the infrastructure should leverage trust and collaborate with suppliers as best as they can to mitigate supply chain risk.

> *"The supply chain issues are putting pressure on our industry unlike anything we have seen before. Finishing projects on time and on budget is always the number one priority, but now, it is the number one headache for us and our clients."*

— Peter Lambrecht. Vice President of Sales, Key Accounts and Solutions, EMEA

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### Best Practices

Peter Panfil, vice president of global power, North America, recommends the following best practices to increase speed and reduce total cost of ownership (TCO) when using a modular data center approach:

- Normalize design of single-line diagrams globally.

- Use rapid deployment configurations.

- Ensure that alternates to conventional lead-acid batteries like lithium-ion (LIB), nickel-zinc (NiZn), or thin plate pure lead (TPPL) batteries have been adopted or piloted.

- Make sure battery run times are tuned to the operation team's capabilities.

- Have global request for proposal (RFP), methods of procedure (MOP), and vendor-managed inventory programs in place.

## Q: How does the skills gap affect the colocation market?

The other major hurdle for builders of colocation data centers in emerging areas is the global lack of electricians, engineers, and other skilled laborers to build, maintain, and operate new data centers. According to our experts, churn among consultants and engineers has become commonplace, especially in areas like the Middle East. In Africa, certain providers are building colocation data centers without the involvement of consultants. The lack of thermal and electrical engineers is becoming a threat for completing projects on time and developing new products. This issue is exacerbated by the pandemic because of restrictions involving international travel for employees.

## Q: How can the colocation data center market and critical infrastructure providers respond?

The skills gap is an existential challenge across the industry, and it will take intensive collaboration between industry leaders, educators, and other key stakeholders to improve recruiting efforts in the coming years. Vertiv is doing its part by establishing large educational programs around the world, including Africa and Dubai. According to Lambrecht, a more short-term solution would be to build data centers that incorporate more automation and predictive maintenance for "making data centers more intelligent to offset the scarcity of human resources."

## Q: What other trends do industry experts predict for the future of the colocation data center market?

According to Havenga, while parts of Asia Pacific are at the forefront of the 5G rollout, he believes we will need to see the introduction of more 5G-enabled innovations, such as self-driving cars and smart cities, for it to be a main driver for data center and colocation growth. However, Lambrecht sees activity — like the three major operators coming out together to support the power requirements of 5G — as an encouraging development.

Sustainability is another trend that can be complicated for colocation data centers that are more focused on speed and cost. Without a guaranteed return on investment (ROI) or the need to support high-density computing, many providers have yet to embrace newer solutions, such as liquid cooling, which have the potential to support sustainability efforts. Therefore, if an organization is considering new technology like chilled water or waterless technology, Havenga recommends weighing the options when balancing efficiency and sustainability with ROI, and considering the environmental factors and costs of the region.

However, with colocation data centers competing to attract the attention of major hyperscalers, our experts believe they will need to adapt and align with the aggressive sustainability, efficiency, and optimization goals of Microsoft, Google, American Tower, and other big players. In the coming years, there will be more advocacy for zero losses, zero carbon, zero water, and zero waste in the data center. For providers looking to become more sustainable while balancing speed and cost, Panfil recommends moving from diesel to hydrogen generators or deploying long-duration batteries, using renewable energy for the main power source, and eventually moving to operate on renewable energy generated locally.

"Utility independence for data centers is not only becoming a sustainability goal, but a business continuity requirement," Panfil says.

> *We have to work with suppliers and clients to make our industry more attractive to young people.*

— Peter Lambrecht. Vice President of Sales, Key Accounts and Solutions, EMEA

**Key Points on Colocation Data Center Market Growth**

The colocation data center market is expected to grow from about $50.58 billion in 2021 to $136.65 billion by 2028.

The colocation data center market is expected to grow at a CAGR of 15.3% from 2021 to 2028.

North America dominated the colocation data center market in 2020 with more than a 35% share and is expected to continue its dominance through 2028. APAC is the second-largest contributor to the market, followed by Europe..

*Source: The Insight Partners, "Data Center Colocation Market Forecast to 2028*

# Notably Efficient Green Mountain Deploys Vertiv Solutions to Bolster Sustainability Pursuits

A Vertiv Case Study



## Background

Serving customers in the financial services, healthcare, and government industries, Green Mountain is one of the world's greenest colocation operators, and therefore, laser focused on product and supplier sustainability when choosing new cooling infrastructure as part of its DC1 facility expansion project, which could have easily been derailed amid pandemic-related restrictions without Vertiv's support.



## Summary

**Location:** Stavanger and Oslo, Norway

**Critical Need:** When expanding the data centre space in its DC1 location, Green Mountain executives not only needed a thermal management solution with leading energy efficiency, but they needed this equipment and additional uninterruptible power supply (UPS) units for a parallel project to be delivered and integrated amid pandemic-related restrictions.

**Vertiv Solution:**

- Vertiv™ Liebert® PCW chilled water units

- Vertiv™ Liebert® EXL S1 UPS

- Vertiv™ service support

**Results:** According to Alexander, the Vertiv™ technologies deployed at Green Mountain are the most energy efficient he has seen. And based on the equipment's power usage effectiveness (PUE), he anticipates the equipment will improve the colocation's overall efficiency rating, which is already extremely high. The solution deployed solidified Green Mountain's commitment to sustainability and ensured its customers will benefit from an optimized operation.

*"Sustainability affects everything we do and is very important whenever we build new colocation data centres. All our customers can see where we get our energy. It is a key differentiator for us."*

- Alexander de Flon Ronning,
Design and Product Manager
Green Mountain