



➤ **HYPERSCALE CLOUD CASE STUDY: SELECTING THE RIGHT WEST COAST DATA CENTER SOLUTION**

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Summary:

With more data distribution and greater demand for IT consumerization, organizations now need more hardware, resources and data center bandwidth. Furthermore, the impact of the cloud is shaping the design of the modern data center. And, here's the reality: **Cloud computing will continue to shape the evolution of the data center and your business model.**

As more users connect to the cloud, organizations will find new ways to deliver services and offerings via a cloud solution. Remember, cloud computing is an ever-changing, highly dynamic platform. This is why it's important to work with a data center partner that can take you to the cloud – or get you there in a hybrid fashion.

[Gartner](#) recently pointed out that more than \$1 trillion in IT spending will be directly or indirectly affected by the shift to cloud during the next five years. The market for cloud services continues to grow, say analysts, making cloud computing one of the most disruptive forces of IT spending today.

[IDC](#) further points out that total spending on IT infrastructure products (server, enterprise storage, and Ethernet switches) for deployment in cloud environments will increase by 18.2% in 2017 to reach \$44.2 billion.

All of this has created a real-world requirement around cloud computing services and, even more so, around hyperscale data centers. New strategies around hybrid IT and service delivery are enabling organizations such as Groupon to truly impact their business services and evolve customer offerings. New business needs around cloud and the hyperscale data center model are driving scenarios where your data center is now a direct part of your global IT platform.

Today, these trends are fueling the push for cloud providers to grow their business by optimizing their data center portfolios globally, and for large enterprises to reduce costs by retiring and consolidating aging data centers into newer colocation facilities. As a result, it's more important than ever before for organizations to work with the right type of data center partner so as to stay agile and resilient.

However, there has been a challenge to find the right data center partner in California, one of the top data center markets in the world. In the Bay Area and Silicon Valley, where demand for data centers is high, pricing for data center space, power, and staff have been high and supply has been constrained at times. The result is data center buyers are asking the question, "Where is the best location for my west coast data center?"

At the heart of the IT infrastructure, a data center that is capable of scaling with the needs of the business is crucial. However, not all data centers are created equal. Furthermore, not every data

center can customize a solution to best fit an organization's IT needs. And, in many situations, the physical location of the data center can be a make-it or break-it situation for an organization because of costs and inherent location risks.

In this paper – we're going to go on a journey with a high-profile hyperscale cloud company that went through the West Coast data center selection process: Groupon. Through it, we'll get a view into the rapidly-growing company's selection process, considerations, challenges, what the West Coast data center market looks like, and the real value brought by a powerful data center partner.



Introduction

New technologies are paving the way for more efficient IT environments capable of scaling with the demands of the business. This means that the IT infrastructure that supports these technologies must do the same.

However, IT professionals looking to expand into the West Coast, and specifically Northern California, are faced with unique challenges. Prices can be expensive for real estate, the cost of power can be a challenge, staffing costs can be high, and there are inherent seismic risks often associated with West Coast data centers.

In looking at a Northern California data center, it's important to understand the choices that need to be made in selecting the right solution and partner. This guide will take a look at the various components a good data center can provide and how real customers are leveraging these data center resources. This includes power, cooling capacity, physical footprint, facility amenities, and – very importantly – location.

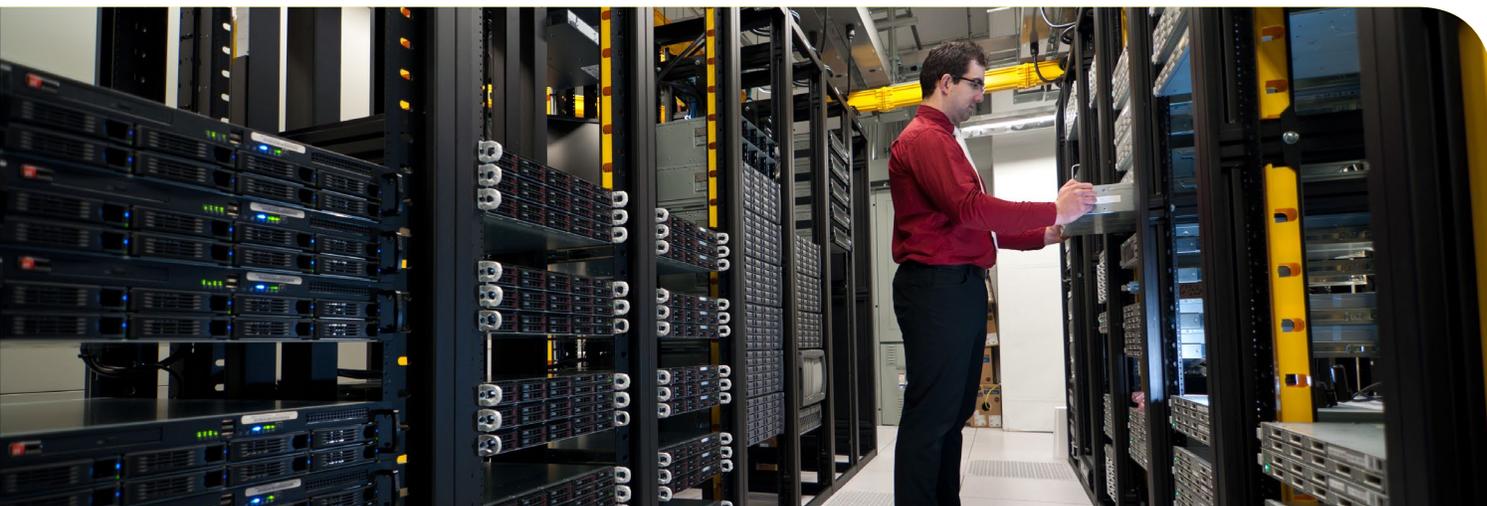
For example, companies with a sizeable footprint in Silicon Valley might look for a data center in the vicinity, but the region is at risk of a seismic event. Locations in Sacramento, on the other hand, can still get you the data center you need in a no-earthquake zone.

The reality is simple: The data center has become the heart of any organization. This is true whether you have your own servers in a data center, use a cloud provider that is housed in a data center, or a hybrid of the two. In fact, spending is expanding around data center technologies. On-premise IT infrastructure spend accounted for more than 60% of all end-user hardware spending in 2016, according to [IDC](#) analysts. Taking all of this into consideration, and with virtualization and cloud computing in the mix, it's more important now than ever to have the right data center partner.

Here's the other truth – data center deployments in the West Coast area continue to increase at a staggering pace. A recent [report](#) from JLL Research shows how new initiatives are pushing demand for space through the roof in many North American markets, causing demand to spread out across both primary and secondary markets alike.

For the data center and cloud professional – the decision process is more important than ever. And, a big part of that selection process when looking at West Coast data centers is to work with a partner who has available space and power and can help you reduce costs and offset risks while delivering superior onsite operations and customer service. That is why it's critical to understand the selection process, and see where real-world use-cases impact true business results.

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Understanding the Selection Process

Before we dive into a real-world customer story, it's important to understand the data center provider selection process.

To begin, you'll need to answer the 'what,' 'where,' and 'how' portions of the data center selection process. From there, you'll analyze your options and deployment scenarios and, ultimately, deliver an optimal solution. However, to get there, you'll need to follow a data center market selection approach. Consider the following phases as guidance.

The Data Center Market Selection Approach

■ Phase 1: Discovery

- ▶ During the discovery phase, you'll need to review and answer a few questions as it relates to your business. First of all, you have a few options when it comes to delivering a data center solution. This includes:

- *Build-to-Suit Solution (Own)*
- *Lease / Colocation Solution*
- *Existing Premises Solution*
- *Hybrid Solution*

Depending on your business, goals, and direction, you may select one or more of the options from above. Just ensure that you align your business strategy with the capabilities of your data center provider.

■ Phase 2: TCO and Analysis of Options

- ▶ Once you understand the type of data center model you require, it is critical to go through the TCO (total cost of ownership) process and understand your options around deployment. TCO criteria can involve:

- *Base rent*
- *Operating expense*
- *Critical power*
- *Cooling*
- *Telecommunications*
- *Capital expenditure*
- *Tenant improvements*

■ Phase 3: Evaluation and Recommendations

- ▶ At this point you have a clear understanding of the type of data center you require and the TCO objectives you're trying to meet. Now, based on the completed evaluation and recommendations from partners and business leaders, you can begin the decision process. When conducting your final assessment and evaluation – the following criteria should be included:

- *Pricing*
- *Connectivity*
- *Location*
- *Cost of power*
- *Network latency*
- *Facility specification*
- *Uptime*
- *Operator track record*
- *Operator financial stability*
- *Future expansion*
- *Customer community*
- *Ease of doing business*

■ Phase 4: Transaction and Implementation Phase

- ▶ Once all evaluation and research activity has been completed, you'll select your data center partner, transact the partnership, and begin the implementation phase. Here, you'll need to work very closely with your data center partner to ensure the deployment process goes smoothly.

With this background, let's dive into our real-world customer story, Groupon, and understand how their selection process impacted the data center partner they chose; and why, as a Silicon Valley organization, they chose Sacramento as their data center location.



RagingWire's new CA3 Data Center brings the latest in data center innovation and customer amenities to seismically-stable Sacramento.



The Data Center: RagingWire | Sacramento, California

- **The Site:** A massive data center campus located 90 miles from the Silicon Valley and Bay Area. RagingWire's new CA3 data center brings the latest in data center innovation and customer amenities to seismically-stable Sacramento.
- **The Facility:** Suited for Bay Area and Silicon Valley organizations that want to house their computers in a low-risk area within driving distance of their offices. The 180,000 sq. ft. CA3 is fully integrated with RagingWire's CA1 and CA2 data centers, and offers a 100% availability SLA and 24x7 onsite support.
- **The Details:**
 - ▶ Location and Facility:
 - Fully integrated with 500,000 sq. ft. CA1/CA2 campus
 - 20,000 sq. ft. of customer office and amenity space
 - ▶ Power and Cooling:
 - 14 MW critical IT load
 - Scalable beyond 22 kW per rack
 - Dedicated 69kV power substation
 - 10,000-ton cooling capacity supports high-density deployments
 - Computer room air handlers at N+2 redundancy
 - ▶ Telecommunications:
 - Carrier-neutral with two telco rooms
 - Three diverse fiber entrances into two diverse/secured vaults
 - Two diverse fiber connections between CA3 and CA1/CA2
 - A wide range of available telecom and cloud providers
 - ▶ Security:
 - Three factor secured access and multi-level security zones with mantraps
 - Galvanized steel fence, anti-climb and anti-cut
 - Concrete bollards with steel reinforcement
 - Digital pan-tilt-zoom (PTZ) cameras monitored by 24x7x365 security staff
 - Iris scanners with holographic targeting
 - ▶ Global
 - Part of the Nexcenter™ global data center portfolio of NTT Communications
 - 140 data centers in 19 countries and regions
 - ▶ Data Center Services:
 - Unlimited Remote Hands and Eyes - 24x7x365
 - Highly flexible custom vaults and cages to meet a range of IT needs
 - Professional cabling and design services by trained technicians
 - Fully redundant network backbone, via multiple carriers, between RagingWire's data center campuses in California, Texas, and Virginia
 - ▶ Customer Amenities:
 - Build-to-suit office space and dedicated conference rooms
 - Dramatic interior featuring a two-story lobby and atrium
 - Free gourmet coffee and fountain soda, free WiFi, and workstation areas
 - Exercise room, climbing wall, showers and lockers
 - Gaming room, TVs, secured outdoor patio, and more



West Coast Data Center Market TCO: Analyzing Base Rent and Power Requirements

A big part of the decision-making process around a good data center provider is ensuring they can deliver on power requirements and space. In that decision, we must also factor in the cost of the required power and space utilization.

With that in mind – let's look at a real scenario examining the West Coast data center market.

Scenario: You're an organization requiring 1 megawatt of critical IT power and 7,000 square feet of space. And, you select 5 markets to examine: Sacramento, San Francisco, Las Vegas, Reno, and Phoenix.



Base Rent Market Analysis

| | SACRAMENTO | SAN FRANCISCO | LAS VEGAS | RENO | PHOENIX |
|--------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| kW Commitment | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| Floor Space | 7,000 sq. ft. |
| Cost per kW | \$150 | \$180 | \$210 | \$180 | \$165 |
| Year 1 | \$1,800,000 | \$2,160,000 | \$2,520,000 | \$2,160,000 | \$1,980,000 |
| Year 3 (+3% escalation) | \$5,563,620 | \$6,676,344 | \$7,789,068 | \$6,676,344 | \$6,119,982 |
| Year 5 (+3% escalation) | \$9,556,444 | \$11,467,733 | \$13,379,022 | \$11,467,733 | \$10,512,089 |
| Year 7 (+3% escalation) | \$13,792,432 | \$16,550,918 | \$19,309,405 | \$16,550,918 | \$15,171,675 |



BASE RENT 1 MW ANNUAL RESERVE POWER COMMITMENT



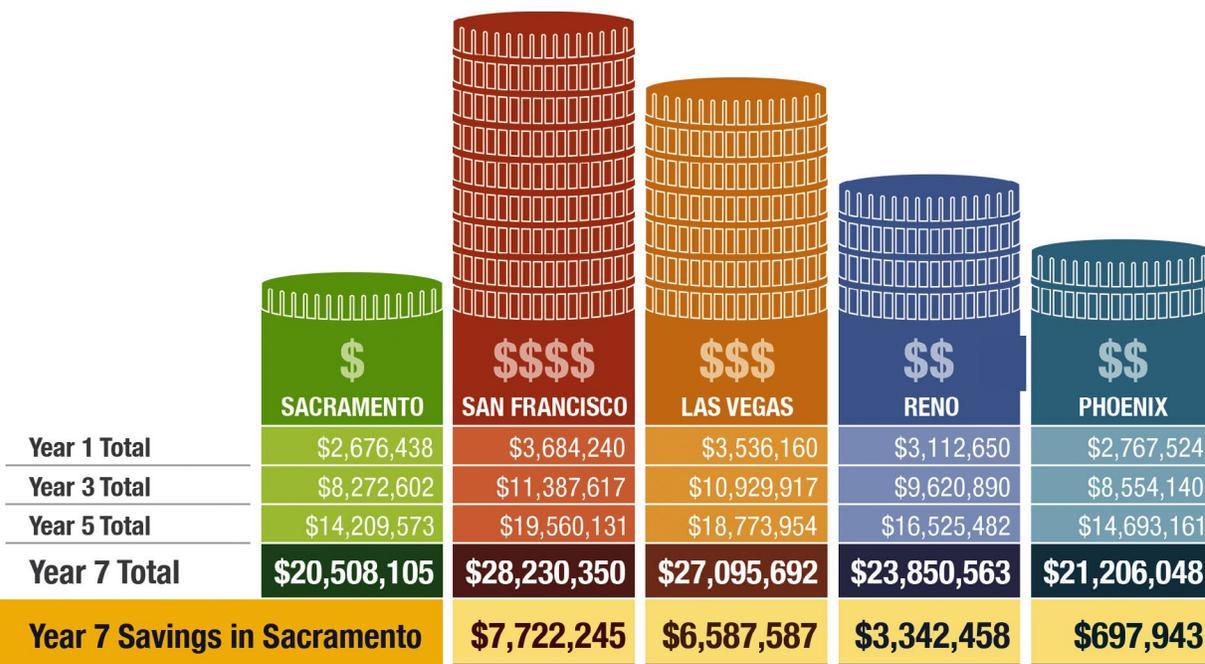
Power and Utility Cost Market Analysis



POWER 1 MW ANNUAL UTILITY POWER COSTS

| | SACRAMENTO | SAN FRANCISCO | LAS VEGAS | RENO | PHOENIX |
|--------------------------------|--------------------|---------------------|--------------------|--------------------|--------------------|
| kW Used | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| Cost per kWh | \$0.069 | \$0.120 | \$0.080 | \$0.075 | \$0.062 |
| PUE Uplift Cost | 1.45 | 1.45 | 1.45 | 1.45 | 1.45 |
| Year 1 | \$876,438 | \$1,524,240 | \$1,016,160 | \$952,650 | \$787,524 |
| Year 3 (+3% escalation) | \$2,708,982 | \$4,711,273 | \$3,140,849 | \$2,944,546 | \$2,434,158 |
| Year 5 (+3% escalation) | \$4,653,128 | \$8,092,397 | \$5,394,931 | \$5,057,748 | \$4,181,072 |
| Year 7 (+3% escalation) | \$6,715,673 | \$11,679,431 | \$7,786,288 | \$7,299,645 | \$6,034,373 |

TCO: Rent and Power – The Total Annual Cost



TCO
BASE RENT + POWER



Why Sacramento?

In this scenario, the Sacramento costs are based on RagingWire’s CA3 Data Center. The figures for the other cities are based on analysis of the overall data center market in those areas.

These costs rank high on a list of reasons to consider Sacramento as a favored data center location:

- Lowest Cost Power:** 40% lower cost of power in Sacramento than San Francisco.
- Lots of Available Capacity:** 5MW available now. Plus, CA3 has another 6MW of availability to scale.
- Shortest Distance:** It’s only 88 miles from the Bay Area.
- Low Latency Network:** Only a 3-millisecond round-trip to the Bay Area.
- Direct Cloud Connectivity:** Direct access to AWS, Azure, Google, and more.
- Very Low Risk:** There have been no major earthquakes in Sacramento for more than 100 years. It’s a separate seismic zone and power grid from the Bay Area.
- Massive Telecom and Cloud Presence:** Feel secure with a carrier neutral environment leveraging multiple redundant fiber feeds coming into the facility from Tier I carriers and direct connections to major cloud providers.
- Ideal Disaster Recovery:** Sacramento acts as an excellent DR site for the entire Bay Area: Close enough for powerful mirroring capabilities, and far enough from mutual risks.

With these great benefits in mind, let’s now look at a real-world case study leveraging the RagingWire Sacramento data center.



As a growing organization, Groupon knew that it needed to partner with the right type of data center provider to align technology strategies with their evolving business goals. Their provider needed to be customer-focused – with capabilities around scale, security, agility, and support.

Case Study: Groupon

Groupon is a global leader of local and online commerce. They have been described as “the online destination when you want to buy just about anything, anytime, anywhere.” By leveraging the company’s global relationships and scale, Groupon offers consumers a vast e-marketplace of deals all over the world. Groupon is redefining how traditional small businesses attract, retain and interact with customers by providing merchants with a suite of products and services, including customizable deal campaigns, credit card payment processing capabilities, and point-of-sale solutions that help businesses grow and operate more effectively.

As a growing organization, Groupon knew that it needed to partner with the right type of data center provider to align technology strategies with their evolving business goals. Their provider needed to be customer-focused, with capabilities around scale, security, agility, and support.

Overview: Groupon, a global leader of local commerce, expanded its enterprise data center portfolio by contracting for 1 MW of power and 5,000 square feet at RagingWire’s new CA3 Data Center in Sacramento. The five-year agreement between RagingWire and Groupon takes the majority of space and power in Vault 1 of CA3, which was opened in April 2015.

Groupon’s Journey: When it came time to select the right data center partner – Groupon considered multiple markets. However, it all began with a data center location in Santa Clara in 2011, which Groupon quickly outgrew. Being an e-commerce platform, they had serious concerns regarding network latency around data and sensitivities around web transactions and content delivery. With this in mind, they **needed to stay on the west coast** to ensure optimal performance, the least amount of **latency**, and best delivery options, but they wanted to avoid the high prices and earthquake risk of Silicon Valley and the Bay Area.

So, they vetted out Los Angeles, Las Vegas, Denver and Sacramento. Throughout the

entire process, they took a holistic approach to selecting the right data center partner. They went through a discovery phase, TCO analysis, recommendation phase, modeling phase, and presented their findings and selection to their C-level executives.

Groupon’s Selection Criteria and Success

Points: To make the entire deployment a success, Groupon outlined their most critical points for a data center deployment. When it came to the final criteria and success points – here’s what Groupon found:

- Although **cost of power** was a part of the decision-making process, more weight was put on the **cost of rent**. However, even more critical was the requirement of **proximity to the Bay area**.
- For Groupon - **latency thresholds** were a *major* driver in selecting the right data center; they specifically wanted to minimize the round-trip time from the Bay area to their new data center location.
- **Carrier-neutrality is important** from the ISP availability and cost perspective. Groupon sought to avoid the inherent risk of network outage when there is a limited number of carriers on site. For example, if the carrier had a maintenance or service outage, Groupon *could not have* the customer become impacted. It was critical for Groupon to engage with a carrier-neutral site to enable the complete availability of features and functionality.
- Having **access to multiple, industry-leading carriers and cloud providers is a huge asset**. Groupon was able to minimize risk and expand global reach by being given the ability to choose between multiple carriers and cloud providers with diverse routes to the data center. From there, they’re able to drive better economics and value granted by competition, and have access to the newest and richest set of service offerings and availability. Ultimately, this results in optimal uptime, enabling the business to stay connected to Groupon’s customers.

RagingWire's Sacramento CA3 data center has 180,000 square feet of space, 14 MW of critical IT power, and 20,000 square feet of customer amenities and Class A office space.



Groupon's Findings: It's critical to have an understanding around your facility requirements, size of the organization, and your use-cases. In some situations, cloud or some kind of hybrid solution might make sense. Groupon knew that they needed a dedicated data center provider. As an e-commerce organization, Groupon valued connectivity, low latency levels, ISP neutrality, and – of course – price. Furthermore, during their selection of a West Coast data center partner, they needed a location that was out of the earthquake zone and allowed the organization to further lower their levels of risk.

Why RagingWire: RagingWire's Sacramento CA3 Data Center has 180,000 square feet of space, 14 MW of critical IT power, and 20,000 square feet of customer amenities and Class A office space. The entire site utilizes RagingWire patented 2N+2® power delivery architecture, which is key to RagingWire's ability to provide 100% availability and flexible power ramps. In their selection process, Groupon noted the new gear and new infrastructure that they could utilize. From there, they saw that RagingWire consistently put

Groupon's needs first and worked to adjust the environment to the needs of their customers' ecosystem. Finally, throughout all of the other locations analyzed, Groupon saw that the Sacramento CA3 Data Center was able to support their business architecture, had the right level of redundancy, was able to provide the proper amounts of density, and was able to deliver all of this at a great price. But, it's not just about price – but also value to the business.

Business Benefits and Outcome: Uptime and business resiliency are absolutely critical for Groupon; but so is availability and flexibility of the infrastructure. After the deployment of the data center, Groupon has recognized several business and technology benefits. They include:

- ✓ The ability to afford customers more availability and access to critical, revenue-building, services. The resiliency of the RagingWire data center allowed Groupon to grow and deliver more diverse services.
- ✓ Groupon was able to go from deployment to service delivery in an incredibly short amount of time. RagingWire was able to provide the right service and infrastructure that allowed Groupon to set up their *entire* ecosystem in **41 days** – as in serving users and delivering application.
- ✓ Operating at one megawatt of power and more, Groupon's buildup time was substantially reduced because of the location and the new infrastructure.
- ✓ Finally, Groupon was able to deliver key components for operation very quickly because of the Sacramento location.

"As a company that's seen incredible growth throughout our seven-year history, it was important for us to find a wholesale data center provider that could meet our requirements for scalability, customizable high-density power, cooling containment, ISP neutrality and physical security," said Groupon's Director of Global Data Center Operations, Harmail Chatha. "RagingWire provided us with exactly what we needed in a timely and efficient manner, helping to ensure that we are able to support our increased traffic demands as our business grows."



Conclusion

Today, organizations have to look for flexible IT options since their business needs may change much more quickly than in previous years. With technology evolving at the pace that it is, data center administrators are consistently tasked with providing optimal service and maximum flexibility. Providers like RagingWire are able to design, build, and operate mission critical data centers that deliver 100% availability and high-density power.

In creating your own data center partnership, make sure to work through the selection process that fits your IT and business needs. From there, ensure that your provider not only supports your use-cases, but is also conveniently located. This is why organizations on the West Coast should absolutely look at RagingWire and Sacramento as an ideal data center location.

Finally, in working with a data center partner, remember to plan out your infrastructure for the future. This means plans around capacity, redundancy, and even future growth should be carefully established. Over time, you can expect that the data center will continue to be leveraged as the key platform for any organization. As more data is pushed through an IT infrastructure, data center managers will have to find new ways to keep their environments flexible and, very importantly, scalable. ■

RagingWire designs, builds, and operates mission critical data centers that deliver 100% availability and high-density power as part of a global data center platform of 140 facilities in 19 countries and regions.

