Business needs

Verne Global needed a robust server infrastructure foundation to meet the high-performance computing needs of data-driven organizations.

Solutions at a glance

- Dell EMC PowerEdge™ C6420, C4140 and R640 servers with Intel® Xeon® processors
- InfiniBand and Ethernet networking
- High-performance and high-capacity storage options

Business results

- Providing HPC and AI services to more than 40 organizations
- Helping customers quickly deploy and scale IT infrastructure
- Powering HPC clusters with renewable energy

The Iceland campus has the capacity for 100 MW of compute. The electricity used in the Iceland campus is 100% renewable.
Delivering HPC as a service

There are some compelling arguments for putting industrial-scale cloud data centers in Iceland. One is that Iceland is rich in renewable energy — the nation generates virtually 100 percent of its electricity from hydropower and geothermal resources. That creates a plentiful supply of clean energy at a predictable price. Another is that Iceland offers an ideal climate that makes it possible to cool data center facilities with cold, ambient air. And, of course, Iceland is strategically located for global businesses, midway between the largest financial markets in Europe and the United States.

These are among the reasons that Verne Global selected Iceland as the location for a vast data center campus that drives high-performance and intensive machine learning applications for a wide range of organizations. The company’s growing list of customers includes financial institutions, manufacturing enterprises, research and life science institutions, and other organizations whose competitiveness depends on HPC, AI and data-driven applications.

Verne Global offers its customers services and capabilities that go far beyond the general infrastructure-as-a-service offerings of today’s hyperscale cloud data centers. Via its hpcDIRECT platform — an HPC-as-a-service (HPCaaS) offering — the company provides customizable bare-metal HPC servers on a reserved and on-demand basis, with all resources supported by the company’s highly knowledgeable HPC technical team.

hpcDIRECT: a look under the hood

The hpcDIRECT platform provides a fully scalable, bare-metal service with the ability to rapidly provision the HPC servers uncontended and securely. hpcDIRECT clusters are built using the latest processor architectures from Intel, fast InfiniBand and Ethernet networks, with storage and memory options to suit the customer’s needs.

The hpcDIRECT platform is based on Dell EMC PowerEdge servers with Intel® Xeon® Scalable processors. For compute nodes, Verne Global offers its customers dense, performance-optimized PowerEdge C6420 nodes, accelerator-optimized high-density PowerEdge C4140 nodes and dense, scalable PowerEdge R640 servers.

“At the core, what we provide as our basic level of service, above physical data centers, is bare-metal compute,” says Tate Cantrell, CTO for Verne Global. Access to bare-metal servers as a service gives Verne Global customers the same flexibility they would have if they built their HPC clusters from scratch.

Ultimately, the customer “has true ownership of the server,” Cantrell says. “They know which one is theirs. They know how it is, they know where it is, and by working with us, they know how it will be deployed. The beauty of the system is that it’s deployed in a very cloudy way, and it’s provisioned very quickly.”

TrueHPC

Verne Global doesn’t offer one-size-fits-all computing solutions. It offers customized “TrueHPC” solutions tailored to the needs and requirements of individual customers. Some organizations look to Verne Global for HPC colocation that they can connect to the Iceland transmission system and control remotely. Others want highly customized HPC facilities designed and sized for their applications, and operated and managed entirely by the IT professionals at Verne Global.

“We built our data centers in such a way that we can provide a variety of solutions,” Cantrell says. “Those solutions range from very low resiliency options that are directly connected to the geothermal and hydropower that Iceland offers, and directly cooled with the outside air, all the way up to bulletproof infrastructure that would be acceptable to the most stringent specifications of any financial institution.”

Cantrell notes that Verne Global’s customers include financial institutions that essentially operate their own highly secure data facilities within the company’s Iceland campus. In addition, the company provides HPC colocation to multiple large manufacturing enterprises. The company’s more notable customers include two of the largest European automobile manufacturers, both of which are leaders in the use of HPC-powered applications to drive their businesses.
“These teams need industrial scale to roll out their applications, because they see their HPC requirements growing exponentially just to be able to drive linear growth on the top line,” Cantrell notes. “If they get into a situation where they’re growing exponentially on a service that is not sustainable to the bottom line, and their expenses are growing exponentially, they aren’t at an industrial scale. That’s the solution that we offer our customers — TrueHPC with maximum scalability.”

For all sizes of organizations, Verne Global’s hpcDIRECT platform takes the complexity and capital costs out of the HPC equation. Verne Global can rapidly deploy a highly customized platform with no upfront charges to the customer — making HPC a pay-as-you-go operational expense.

hpcDIRECT is accessible via a range of options, from incremental additions that augment a customer’s existing HPC resources to huge clusters that support massive processing requirements with petaflops of compute. This flexibility makes the platform an ideal solution for the most demanding, data-driven applications, including artificial intelligence workloads, computer-aided engineering, genomic sequencing, molecular modeling and financial grid computing.

HPC and application expertise

Access to flexible, cost-effective infrastructure is only part of the Verne Global value proposition. Organizations also look to the company for HPC and application expertise that they couldn’t get from the typical cloud service provider.

“We have to be not just HPC specialists, but also machine learning and deep learning experts as well,” says Wil Wellington, product manager for hpcDIRECT. “We get involved with our customers. We work with them to understand their applications and requirements, to understand where they want to go. What are their pain points? What is their technical expertise? From there, we become part of their team. Or we can stand back and let them carry on.”

Cantrell adds that Verne Global helps its customers leverage concepts like DevOps, cloud-native applications and federation to help them gain the greatest value from their HPC investments.

“By using concepts like infrastructure as code and by using cloud-native principles, we bring legacy customers up to a level where they can gain an amazing amount of knowledge about their HPC cluster,” he says. “They can then work to optimize their applications to make better use of the infrastructure.”

Working with Dell EMC

In the process of bringing its bare-metal compute cloud to market, Verne Global worked closely with Dell EMC and its OEM group, including Field CTO Thomas Johnson.

“Dell EMC has helped us tremendously,” Cantrell says. “To support our ambitions to provide a TrueHPC environment, we’ve been able to work with that group to define something that is slightly off of the standard SKU, but is something that our customers need. “Dell EMC was able to build us a support system to provide that ‘non-standard’ piece of equipment as if it were standard.”

That kind of support is particularly important to a company that strives to give its customers the opportunity to push the envelope over something that they themselves could buy off the shelf, Cantrell notes.

“We want our customers to be able to do things with hpcDIRECT that they can’t do by themselves,” he says. “So it’s really important to have vendor partners like Dell EMC to enable us on the hardware side to be able to physically push the envelope. Frankly, if Dell EMC wasn’t there to do that, well, we’d have to build it ourselves. We’re used to doing that, but we have become comfortable with the way Dell EMC supports the type of innovation that Verne Global is all about.”