Delivering Performance and a Seamless Experience with Gompute’s HPC in the Cloud

Gompute* chooses Intel® Omni-Path Architecture and Intel® Xeon® Scalable processors to expand its long-time HPC on-demand services

Executive Summary
When engineering organizations around the world need access to HPC—whether from lack of in-house technical computing or a need to expand capacity—they turn to Gompute’s HPC in-the-cloud services. When Gompute needed to expand their HPC resources, their long-time experience with Intel’s HPC technologies led them to extend their system using Lenovo* servers with Intel® Xeon® Scalable and Intel® Xeon® processors E5 v4 and v3, interconnected by Intel® Omni-Path Architecture (Intel® OPA).

Challenge
Gompute has been providing HPC on demand since 2002; it is one of the oldest companies to offer HPC as a service. Their cloud data center located in Sweden provides HPC for customers in a wide range of industries around the world, including manufacturing, automotive, and other engineering applications. “Our customers typically run Computer Aided Engineering (CAE) workloads, such as crash simulation, computational fluid dynamics (CFD), structural analysis, and others,” said Daniel Persson, CEO of Gompute.

Their business model is to provide comprehensive HPC as a service offerings, including end user support. “We provide an entire HPC solution, including the...
software the customer needs to run their jobs using the native gui,” explained Persson. Gompute provides access to both temporary commercial software (e.g. ANSYS® Fluent*) and open source software. Customers can also come to Gompute with their own commercial software licenses and run their applications on Gompute resources. “We make it very flexible, and provide a complete ready-to-run HPC resource,” added Persson.

In 2016, business was expanding. They needed to add more HPC resources to respond to customer needs. They had previously worked with IBM® System x® for many years, and with Lenovo® since the transition of IBM’s enterprise server business to Lenovo. So, they turned to Lenovo for a new HPC solution.

Solution
Gompute has relied on Intel technologies for many years. “We first started deploying the predecessor of Intel Omni-Path Architecture many years ago, working with the developers at PathScale,” added Persson. PathScale was eventually acquired by QLogic, and Intel acquired the QLogic technology, which became Intel® TrueScale adapters, and was further developed into Intel OPA. “We then used Intel TrueScale devices, and when we heard of Intel's continuing development of Intel OPA, we were excited to see what kind of performance we could achieve with it.”

Gompute’s system expansion, with Intel Xeon processors E5 v3 and v4 and Intel OPA, was added to their already extensive HPC cloud infrastructure. It includes several nodes with NVIDIA GPUs for visualization.

Gompute has invested many years in developing an entire Gompute Platform, which is both the foundation of their infrastructure and offered to customers who want to run an in-house HPC solution. “We developed an entire software stack with an interface and the necessary tools to access our resources—whether the customer is using an in-house Gompute Platform or our cloud data center in Sweden,” stated Persson. “How ever they’re used to running their jobs locally, they get the same experience in the cloud. If they’re used to a GUI, they get a GUI; if they’re used to a command line, they get a command line.” Gompute’s software includes both remote visualization and data transfer acceleration tools. Customers can do visual pre/post processing in the cloud and see the results on their local workstation.

Results
“What we enable is for customers to make better utilization of resources,” explained Persson. “Instead of buying a large cluster or workstation that’s used occasionally for their technical HPC processing and sitting idle otherwise, they schedule time on our clusters to use just the right amount of processing for a job.” And with their software stack, Gompute makes the experience as seamless as working locally on a laptop or workstation. “We are very happy using these machines with the low latency and high message rate of the Intel OPA fabric,” concluded Persson.

Solution Summary
To keep up with growing customer demand, Gompute expanded their HPC in-the-cloud infrastructure with a large addition of nodes based on Intel Xeon processor E5 v3 and v4 interconnected by Intel OPA. Several of these Lenovo servers offer visualization processing with NVIDIA GPUs.

Where to Get More Information
Learn more about Gompute at https://www.gompute.com/.

Solution Ingredients
- Lenovo® NextScale® servers with Intel® Xeon® processor E5 v3 and v4
- Lenovo servers with Intel® Xeon Scalable processors
- Intel® OPA HPC fabric
- NVIDIA® Quadro M5000 and K80 GPUs