



## Case Study

### **Ace Computers, BeeGFS Streamline Cluster Workflow for Elite Defense Contractor**

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ThinkParQ BeeGFS CEO Sven Breuner

#### **The Client's Challenge**

Traditionally, even the fastest computer cluster has been at the mercy of limited storage access speed. This is an issue that nearly all high level cluster users are dealing with, including one of Ace Computer's valued clients, a premier computational physics defense contractor.

Considering that the client has 10s of 1,000s of files open at one time involving projects that include aircraft, ballistic missile defense, motorsports, armor development, biological systems, and missile and warhead design and development it's easy to get the picture.

Ace Computers and Business Development Manager Barry Spiegel have been providing HPC cluster and workstation solutions to the client since 2009. In fact the client relies on Ace Computers and Barry to solve issues such as latent storage access.

The client's computational analyst said, "We run high fidelity computational physics simulations. We are growing and we produce a lot of data. So we were in a position where we needed more nodes, but we also needed to do something to increase the speed of storage access." Barry recommended ThinkParQ's BeeGFS solution.



#### **Our Solution**

Ace Computers provided the additional cluster nodes, a petabyte of storage and the software interface. BeeGFS provided storage parallel file servers in the form of data servers and meta servers.

BeeGFS was designed to tackle the problem of the growing gap between compute speed of large HPC clusters and the limited speed of storage access for these clusters--stalling on disk access while reading input data or writing the intermediate or final simulation results. BeeGFS enables storage clustering by transparently distributing data across an arbitrary number of storage servers to deliver the aggregate throughput of all the servers in the system. This results in high streaming throughput and high IOPS; and allowing parallel data access from all compute nodes concurrently.

BeeGFS has a number of instrumental features that make it ideal for demanding, high-performance, high-throughput workloads typically found in applications such as HPC, life sciences, deep learning, big data analytics and financial services.

ThinkParQ GmbH CEO Sven Breuner said, “Open Source BeeGFS was especially designed for high performance data access. It is based on very lightweight services that communicate via a custom BeeGFS-native network protocol for lowest possible access latency. Such careful optimizations enable BeeGFS to not only work well with large files (which many parallel storage solutions claim to do), but also with a large number of small files (which is considered a major problem for competing products).”

The bottom line is that the Ace Computers/BeeGFS solution allows the client to efficiently run their simulations on a high number of compute nodes without stalling the applications on disk access.

## **Their Success**

Prior to full implementation, the client tested the solution for six months—there were some minor issues, but the performance is now outstanding.

The client’s computational analyst said, “We have been working with Ace and BeeGFS on this project for over a year and it is absolutely phenomenal. For what you are paying, there is nothing else like it. We are switching everything over to this. We are continually adding server capacity and when we do, the BeeGFS solution scales seamlessly. Basically all you have to do is plug in more servers. It is 100% redundant. If there is a crash, everything just fails over. There is no downtime.”

Barry explained, “The best part was working with this client to create a solution for their whole environment that will last over the long term. BeeGFS allows us to continue adding additional petabytes of storage to their solution.”

Sven was impressed by how agile and flexible the Ace Computers team was and how quickly they were able to adapt to customer demands. “It was immediately obvious that this team was absolutely thinking in terms of solutions to provide a system that best fits the client. This is very different from a number of other companies that we have encountered, where it rather seemed like they tried to make the client’s issue fit what they wanted to sell. They designed an innovative tailored solution that really fits the client.”

The client’s computational analyst concluded, “Ace Computers has always given us really good pricing and they also provide good customer service. Barry is great with finding solutions like this and getting us technical support. We use a lot of proprietary hardware. Sometimes we have snags with support from the vendors, but Barry will intervene and get us the help we need. If we are having issues or just need some advice, the Ace technical staff is very responsive, very knowledgeable and very accessible. They don’t put us on hold. Usually it’s just a quick call and we are back to work. We buy everything from Ace Computers.”

## **About ThinkParQ’s BeeGFS**

The BeeGFS parallel file system was developed specifically for performance-critical environments and with a strong focus on easy installation and high flexibility, including converged setups where storage servers are also used for compute jobs either permanently or for temporary burst buffering. By increasing the number of servers and disks in the system, performance and capacity of a BeeGFS file system can simply be scaled out to the desired level, seamlessly from small clusters up to enterprise-class systems with thousands of nodes. BeeGFS is powering the storage of thousands of scientific and industry customer sites worldwide, including several systems on the Top500 list, which represents the fastest supercomputers in the world.

## **About Ace Computers**

Leading custom computer builder and HPC cluster specialist, Ace Computers currently holds the following contracts: SEWP V, CCS-2, GSA, WSIPC, PEPPM, State of Wis., State of Ga. The company is a Woman-Owned Small Business custom technology systems manufacturer and reseller for the public sector as well as the commercial sector. Channel partners include Intel, Supermicro, NVIDIA, Mellanox and Samsung among others. An industry leader since 1983, the company is a multi-year HPCwire Readers’ Choice Award finalist. In addition to some of the finest academic institutions in the U.S., long-term clients include the U.S. Department of Energy and the U.S. Department of Defense. In addition to our Greater Chicago headquarters, Ace Computers has locations in New Jersey, Pennsylvania, Virginia, and Nevada. To contact Ace Computers, call 1-877-223-2667 or 1-847-952-6900 or visit <http://www.acecomputers.com/>.