



ATK Aerospace Uses Panasas® ActiveStor® to Accelerate Design

ATK Aerospace is the world's top producer of solid rocket propulsion systems and a leading supplier of military and commercial aircraft structures. ATK engineers need state of the art computer-aided engineering (CAE) tools to design and simulate performance of solid fuel rocket. Their high performance computing center relies on Panasas ActiveStor to provide cost-effective performance and ease of use to fuel engineering design and simulations.

SUMMARY

CUSTOMER

ATK Aerospace

INDUSTRY

Aerospace manufacturing

CHALLENGE

ATK needed a stable, reliable, high performance parallel storage system for their design engineering teams

SOLUTION

- Panasas ActiveStor 12 (60TB)
- PanFS parallel file system
- 10Gb Ethernet switching

RESULT

- Simple, reliable storage with unmatched performance
- Painless maintenance and superior technical support

ATK was founded in 1990 when Honeywell spun off its defense businesses. ATK expanded into the aerospace market with the acquisitions of Hercules Aerospace Company in 1995 and Thiokol Propulsion in 2001, which transformed the company into the world's largest supplier of solid propellant rocket motors and a leading provider of high-performance composite structures. ATK is in a highly competitive industry and use advanced design and simulation applications such as ANSYS Fluent, CD-adapco STAR-CCM+, and Simulia Abaqus to improve reliability, speed time-to-market and reduce manufacturing costs. ATK has a centralized high performance computing center dedicated to their engineering teams at various sites. The center is currently used by several business units within the company in 14 sites across the country.

Ramesh Krishnan, senior staff engineer at ATK, is responsible for making sure that the engineering teams have the hardware and software needed to support their simulation applications. In order to maintain their services at the highest level, ATK refreshes its technology on a three-year lease cycle. This allows ATK to provide state-of-the-art services to their engineers. "We get the very best hardware and software that we can get, for our budget, and then refresh it every three years," said Krishnan.

THE CHALLENGE

ATK acquired its first Linux cluster along with a GPFS parallel file system about six years ago with its prior technology refresh. The implementation of the cluster provided a significant boost to capacity and application performance. The GPFS file system, however, had been problematic with sporadic performance and reliability issues. In their subsequent HPC technology refresh about three years ago, ATK planned to update its existing HPC infrastructure with a newer, larger, faster Linux cluster and a better performing file system. Its IT staff knew that their key applications required parallel I/O and that a parallel file system would provide them with the best performance.

ATK does not maintain a large dedicated support staff to operate and maintain their HPC environment and so sought a reliable, robust high performance storage platform that would not require a great amount of maintenance effort. "We considered the Lustre open-source parallel file system, but it seemed that it would require a lot of work and skills to configure and maintain," said Krishnan. "We heard about Panasas at HPC conferences, industry contacts and from other users. ActiveStor performance was impressive and the fact that Panasas worked directly with our software vendor to ensure compatibility and optimize performance with these applications was very important to us. Once we took a look at what Panasas had to offer, we knew that it would be the best fit for us."

"Panasas is what storage should be—something that you don't have to think about."

Nate Fuhriman, *HPC Administrator, ATK*



THE PANASAS SOLUTION

ATK had intended to purchase a complete compute, network and storage solution from a single vendor, as it had done in the past. However, the vendor they selected for the computer and networking offered a competing storage solution. The team at ATK recognized the importance of the storage platform to their operations and to their users, so they elected to purchase storage separately—directly from Panasas.

The Panasas ActiveStor storage appliance solution consisted of a fully integrated parallel file system connected to their InfiniBand-based compute cluster. The implementation was quick and simple. ActiveStor provided the performance that ATK needed in a highly reliable and easy to manage package.

“Panasas ActiveStor speeds up our design and simulation processes and saves us an incredible amount of time and money.”

Ramesh Krishnan, *Senior Staff Engineer Engineering Process & Tools, ATK Aerospace*

THE RESULT

ActiveStor has been extremely reliable since day one and system maintenance has been painless. The HPC center is a very small shop and doesn't have the resources to spend time making things work. As a commercial operation it needs hardware and software that works and doesn't require much attention.

“I love it because the users don't even notice it's there,” said Nate Fuhriman, system administrator at ATK. “If a storage blade fails, I get a replacement quickly and no one knows that anything went wrong. When I call in for support, I get someone who knows what they're talking about, not just reading a script. Panasas is very responsive.”

“Panasas has one of the nicest file systems I've ever used. It's what storage should be—it's something that you don't have to think about. It just does its thing,” said Fuhriman.

Reaching for the Stars

ATK is a pioneer in solid rocket propulsion systems, missile defense, solar arrays and satellite management systems, and develops new technologies for small and micro satellites. It has built propulsion systems, including those that lifted the Space Shuttle, the Mars rover and the Hubble Space Telescope into space.

Efficient design and simulation of all aspects of its products is critical to ATK. Engineers model fluid dynamics, combustion and structural performance accounting for conditions that might occur during lift-off or flight. ATK relies heavily on state-of-the-art simulation software to improve reliability, durability, aerodynamics, and to reduce manufacturing costs. The ability to speed the design process and reduce the number of live-fire tests means cutting costs and beating competitors. “It can cost millions to test fire a missile or the space shuttle rocket,” said Krishnan. “We are under tremendous cost pressures. Anything we can do to cut costs, improve reliability and robustness and save time is critical to us. Speeding up the design and simulation process with platforms like Panasas ActiveStor saves us an incredible amount of time and money.”

