BUYER'S GUIDE | Manufacturing

Upgrade Your Storage Approach to Expertly Manage Simulation Data

Selecting Performance Scale-out NAS Solutions for Product Engineering

This buyer's guide is intended to help you specify, evaluate, and choose your next scale-out network-attached storage (NAS) system. First, let's look at the business benefits to your product engineering activities when you upgrade your storage infrastructure.

How New Storage Technologies Drive Success

Simulation is a key part of the design cycle for products such as smartphones, intelligent thermostats, electric automobiles, and surgical robots. Simulation tools allow engineers to test new ideas easily and accurately, increasing confidence in product design while shortening time to market. When redesigning your IT infrastructure to support next-generation simulation tools, you can gain new workflow advantages by upgrading the storage system at the same time.

Scale Storage to Keep up with the Torrent of Simulation Test Data

Simulation software generates massive amounts of test data, putting pressure on the storage infrastructure to scale. While many organizations used to store such data on inexpensive, low-performance disks, the performance advantages of flash storage devices combined with high-density hard drives is causing storage architects to take a second look. The more data you optimally place on high-performance and high-density devices, the less time engineers have to wait to access the specific data they need.

Unlock the Full Processing Power of Your Computing Resources

Next-generation technologies such as multidisciplinary design exploration (MDX) require extremely powerful processing components. Achieving peak computing performance at scale demands a storage system with sufficient I/O (input/output) to match the processor speeds of many compute clients. Advanced manufacturers are turning to hybrid flash/SATA scale-out NAS appliances to avoid performance bottlenecks caused by legacy storage or to avoid the high cost of all-flash storage.

Get Full Value from Investments in Hardware

A storage system that can't keep up with the demands of distributed computing resources essentially degrades the value of your investment. For example, if the software spends 10 percent of the time waiting for storage, you are losing 10 percent of the value of your investment in the entire simulation system.

Keep Engineers Working at Full Productivity

Reliability takes on a new importance when it comes to complex, multidisciplinary simulations that take hours or even days to complete. An outage at the wrong time could result in repeating a simulation—a significant drain on scarce engineering time. Upgrading to a highly reliable storage infrastructure helps minimize downtime and maximize productivity.

What to Include in Your Requirements Checklist

When looking for a storage solution for engineering simulation, most project managers organize their thinking in a checklist that guides both the architecture design and the vendor selection process. You can begin preparing your checklist by answering these four key questions.

1. How Will New Storage Technologies Impact Our System Architecture?

Start with an architecture that offers the greatest degree of flexibility for deploying applications, servers, storage, networks, and security. Decide how you will respond to emerging needs for additional capacity and performance across your on-premise data centers as well as how you will use shared and public cloud resources. Don't ignore storage system management, which has a considerable effect on your operating expenses.

2. How Fast Will Our Data Grow?

Analyze historical patterns to characterize the general growth trends for your organization's simulation data. Consider the impact of MDX and parallel simulation, which can easily swamp a storage subsystem that's not designed to scale quickly.

"Our computer-aided engineering software uses multi-physics to achieve the highest degree of accuracy possible when modeling complex systems for our customers. When we started looking at various parallel file systems to solve our I/O bottlenecks, we tested the Panasas system and the bottlenecks disappeared. We were able to run complex MDX simulations without impacting other system users. Panasas storage is something you just don't worry about. You just set it and forget it."

Steven Feldman
Senior Vice President for IT
CD-adapco – a Siemens business

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3. What Is Our Optimum Refresh Cycle?

Don't just accept the vendor's recommendation for a refresh cycle. Instead, study your own return on investment (ROI) and total cost of ownership history and projected growth to determine the refresh interval that best fits with your specific storage experience and projections. By extending the life of storage investments, you improve overall ROI and free up resources to invest in innovative new technologies.

4. How Much Reliability and Availability Do We Need (and Can We Afford)?

Network outages can easily derail compute-intensive tasks such as finite element modeling, integrated circuit simulation, and computational fluid dynamics. Determining reliability requirements involves evaluating a set of complex factors such as a RAID error protection scheme and meantime to data loss. If your staff lacks expertise in this area, it's a good idea to hire an outside expert or firm.

How Panasas Stacks Up

As more powerful simulation tools produce seemingly endless streams of data, the stakes involved in choosing a storage vendor become higher and higher. Here are four key reasons why you should consider a Panasas® ActiveStor® solution for your centralized simulation storage system.

1. True Linear Scalability

With the ActiveStor appliance, you can easily and seamlessly scale storage performance and capacity without limiting the number of concurrent simulations. Your budget also scales in a predictable and flexible way because you pay for what you need as you grow.

2. Ultrafast Streaming Performance

Panasas storage can support even the highest aggregate data rate requirements in your computing infrastructure. When processing components are running at peak performance, simulations take less time, contributing to faster time to market for new products while also increasing confidence that the greatest range of simulations have been performed to the satisfaction of the entire team.

3. Enterprise-Grade Reliability and Availability

In most NAS offerings, scalability comes at the cost of lower performance and reliability. With the ActiveStor solution, that trade-off no longer exists. Data reliability, availability, and performance actually increase as you scale Panasas storage, and you can use enterprise data services such as snapshots and quotas at no extra cost.

4. Management Simplicity, Lower Costs

You can reduce storage complexity in the data center by consolidating many different storage products to use as few as possible. Panasas offers the fully integrated ActiveStor scale-out NAS appliance with a single point of management, regardless of scale. As a result, one IT administrator can easily manage dozens to hundreds of terabytes of ActiveStor storage to start, and administration stays just as easy when the ActiveStor solution scales to petabytes of storage capacity.

What to Do Next

To learn how Panasas storage can drive innovation in your product engineering group, visit www.panasas.com.