ACCELERATE DISCOVERY
WITH HIGH PERFORMANCE HYBRID SCALE-OUT NAS

NEXT-GEN SEQUENCING | BIOINFORMATICS | GENOMICS | COMPUTATIONAL BIOLOGY | MASS SPECTROMETRY

DATA GROWTH IN LIFE SCIENCES

Life science research organizations are re-evaluating their storage strategies in the face of rapidly growing volumes of critically important data. The increased use of advanced gene sequencing and medical imaging applications are taxing legacy storage infrastructures. Life sciences applications are driving the need for fast, extremely scalable, easy-to-manage, and affordable high-performance storage systems that handle intense technical workloads while accelerating time-to-results.

TRADITIONAL NAS SOLUTIONS

Constrained by in-band filer heads and hardware RAID controller limitations, traditional NAS solutions typically have difficulty delivering the required data throughput to keep life sciences workflows running optimally. Because legacy NAS systems are not true scale-out storage platforms architected for technical computing, the inevitable results are workflow bottlenecks, costly islands of storage, increased management effort, and longer time-to-discovery.

PANASAS® ACTIVESTOR® PARALLEL STORAGE

Panasas ActiveStor hybrid scale-out NAS appliances deliver a true scale-out NAS architecture, addressing the rapid growth of critical data in technical computing. ActiveStor not only meets the capacity and performance scalability requirements in life science applications, it provides care-free management regardless of scale—all with affordable total cost of ownership. ActiveStor 16 is a fully integrated storage appliance with enterprise-grade interoperability in heterogeneous IT environments. ActiveStor supports non-disruptive scaling of performance and capacity with advanced data protection and availability.
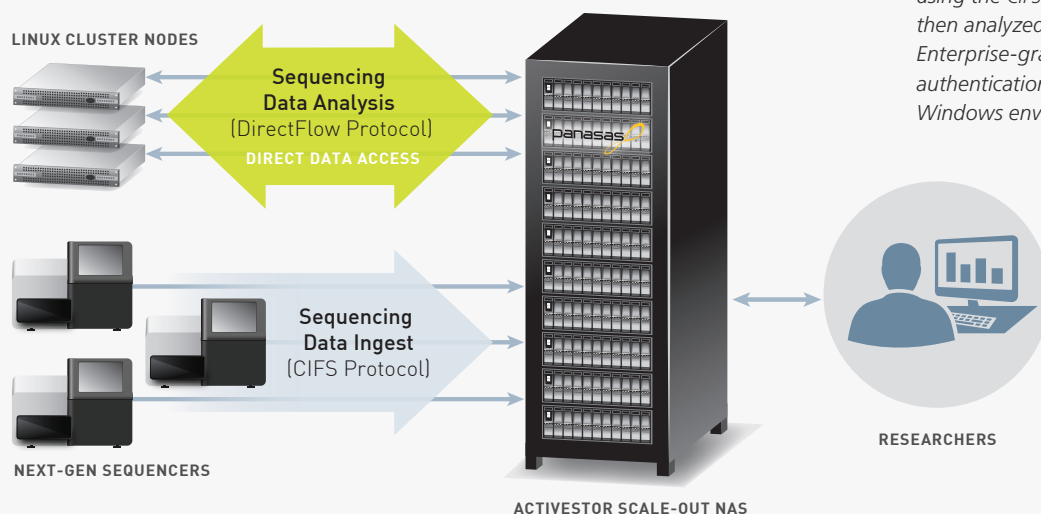
The ActiveStor platform leverages an advanced blade architecture and the PanFS® storage operating system to remove performance bottlenecks. Using Panasas DirectFlow® protocol, Linux compute clients read and write data in parallel directly to and from storage devices. As a result, hundreds of application clients have simultaneous and incredibly fast direct parallel access to very large data sets.

Direct parallel data access is important because while sequencers often generate data in single streams, analysis of sequencer data can be done in parallel with many clients reading and writing directly to storage. With metadata operations processed outside the data path up to 90% of the time, the performance impact to data access is minimized. As a result, workflows are accelerated.

Enterprise-class interoperability with Linux, Unix, and Windows systems is supported for life sciences workflows that depend on a mixture of platforms.

LIFE SCIENCES NGS WORKFLOW

LINUX CLUSTER NODES

Sequencing Data Analysis (DirectFlow Protocol)
DIRECT DATA ACCESS

Sequencing Data Ingest (CIFS Protocol)

NEXT-GEN SEQUENCERS

ACTIVESTOR SCALE-OUT NAS

RESEARCHERS

In this NGS workflow example, Windows workstations connected to sequencers upload sequencing data into ActiveStor using the CIFS protocol. These data sets are then analyzed by a Linux compute cluster. Enterprise-grade CIFS support minimizes authentication issues between Linux and Windows environments.

panasas®

PANASAS ACTIVESTOR

HYBRID SCALE-OUT NAS FOR TECHNICAL
LIFE SCIENCES WORKFLOWS

Panasas ActiveStor is the world's only scale-out NAS solution designed to accelerate technical workflows. ActiveStor brings easy management to large- and small-scale life sciences environments. ActiveStor also delivers the capacity, scalability, manageability, and value required for next-gen sequencing, computational chemistry, bioinformatics, and other data-intensive scientific applications.

Easily Scalable Performance and Capacity

Simply add individual blade chassis or entire racks to non-disruptively scale capacity and performance as storage requirements grow. This makes it easy to linearly scale capacity to 12 petabytes and performance to a staggering 150GB/s.

Scalable capacity ensures that multiple data sets can be maintained and quickly made available across computational chemistry, bioinformatics, and other workflows. Even the largest data sets, such as micro array or mass spectrometry image repositories, are effectively managed within a single scalable namespace and effortlessly shared among researchers, streamlining collaboration.

Superior Manageability

ActiveStor provides a single point of management for a single, scalable file system, allowing researchers to focus on their work, rather than IT headaches. Capacity and performance planning, mount point management, and data load balancing across multiple pools of storage are all common administration problems that are easily solved with Panasas storage.

RAID 6+ Revolutionizes Reliability and Availability

Data reliability and availability on an ActiveStor solution actually increase with scale, not the other way around. Its innovative per-file RAID architecture with RAID 6+ triple-parity data protection establishes a new standard for enterprise-grade data reliability.

SOLUTION HIGHLIGHTS

Extreme Performance
Lightning-fast response time and parallel access for massive throughput

Scalability
Effortlessly scales to 12PB and 150GB/s or 1.4M IOPS

Easy Management
Single point of management for a single, scalable file system allows administrators to focus on managing data instead of their IT infrastructure

Unsurpassed Data Protection
Per-file RAID 6+ with triple parity protection and the fastest RAID rebuilds available

Compelling TCO
Outstanding price/performance, investment protection, utilization rates, and simplified management

RAID 6+ is far more robust than a typical RAID 6 implementation, providing availability and reliability at scale that meets the requirements of business critical workflows. In addition to delivering fast, parallel RAID rebuild performance, ActiveStor is a boon to business continuity efforts as it is able to maintain availability to all unaffected files even after three drive failures where other storage systems would have gone completely off-line.

Compelling Total Cost of Ownership

ActiveStor 16 combines high density SATA with lightning-fast SSD technology for exceptional throughput (GB/s) and small file IOPS performance. ActiveStor appliances offer an attractive total cost of ownership while fully addressing scalbility and performance of even the most I/O-intensive computing applications.

Panasas and the BioTeam—

"Building IT Infrastructure for Next Generation Bioscience Workflows."

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