



Accelerating HPC Workloads for the Global Enterprise

Key Benefits

- Flexibility to deploy storage and compute on premises or in the cloud
- Accelerated processes with high performance for heavy read, write, and metadata workloads
- Pay-as-your-data-grows scalability
- Investment protection with seamless operation between compute and existing NAS resources
- Cost-saving consolidation to a centralized data center or the cloud
- Simpler management with global namespace
- Choose—or change—cloud providers for maximum functionality and value
- Productive collaboration enabled by high performance over the WAN

The best of both worlds: On-premises NAS optimization and Cloud scaling for storage and compute

Addressing the massive storage requirements of complex high-performance computing (HPC) environments is one of the biggest challenges enterprise IT teams face. Avere solutions ensure storage performance keeps pace with workload demand by enabling enterprises to derive greater performance from existing storage infrastructure, as well as to take advantage of cloud-based resources to expand the capacity and throughput of HPC platforms.

Avere Systems technology accelerates workflows by accelerating data access and making that access available to more concurrent requests. Building a global HPC platform on Avere technology can enable enterprises to rapidly scale from one hundred to tens of thousands of cores and beyond—without sacrificing performance or exceeding budget and staffing limits.

Challenge: Scale HPC without Prohibitive Costs and Complexity

Global user communities require fast access to massive datasets and I/O performance to keep pace with heavy workload demand. Engineering design datasets, for example, can routinely range in the tens of gigabytes in size. In life sciences applications, files can hit 100 gigabytes with daily processing workloads approaching hundreds of thousands of jobs. Adding to the complexity for most enterprises, multiple business units with diverse computational and storage requirements require HPC platforms to be equally capable of supporting small-file, high-CPU workloads.

Growth exacerbates the challenges. Many enterprises already maintain petabytes of capacity on premises supporting grid clusters of hundreds or even thousands of cores and hundreds or thousands of users. Some high-growth companies predict those numbers will grow 10X over the next few years. For most of these organizations, expanding traditional infrastructure at such scale is simply too costly and complex.

Solution: Avere for NAS Optimization and Cloud Enablement

Enterprises can now more easily implement a global platform that overcomes the scale and cost constraints of traditional systems. By abstracting compute and storage infrastructure, such a platform can offer ubiquitous, on-demand access to nearly infinite HPC resources. Avere Systems provides the enabling technology for the global platform. Taking advantage of Avere technology for both NAS optimization and cloud integration, enterprises can deliver critical data access and storage efficiencies that help make the global platform a realistic, affordable, and manageable solution for business.

Avere solutions help enterprises deliver big-data performance, scalability, access, and simplified storage management in HPC environments. For on-premises storage performance, the Avere Systems physical FXT Edge filer provides high-speed access to existing NAS storage capacity. Avere FXT Edge filers also enable seamless access to virtually unlimited cloud-based object storage. The Avere global namespace functionality allows management of all storage—public cloud object and NAS—in a global namespace with transparent data mobility.

Avere FXT Series

Purpose-Built for the Cloud

- Flexibility to deploy public cloud storage and NAS
- Scale application performance on premises and in the cloud
- AES-256 encryption, FIPS 140-2 Level 1 compliance keeps data secure
- Compression for storage efficiency
- Cloud snapshots for data protection

Best-In-Class NAS Features

- NFS and SMB protocol support
- Clustering scales performance to hundreds of GB/s throughput and over ten million IOPS
- Active/active failover ensures HA
- Dynamic tiering hides WAN latency

Simplified Management

- Global namespace integrates public cloud storage and NAS
- Transparent data mobility and replication across heterogeneous storage
- GUI provides rich, historical statistics & graphical monitoring
- SNMP & KMIP support, XML-RPC interface, email alerts

Cloud Support

- Microsoft Azure Cloud Compute and Storage
- Amazon Elastic Compute Cloud and Amazon Simple Storage Service
- Google Compute Engine and Cloud Storage (Multi-Regional, Regional, and Nearline)



Avere Virtual FXT Edge filers (vFXTs) give enterprises the ability to perform HPC on the cloud, eliminating the latency and data management issues that would otherwise make cloud compute impractical for statistics, computational biology and chemistry, EDA, financial simulation and modeling, and other HPC applications that routinely run against extremely large datasets.

Benefits: Commodity HPC, Cost Benefits, and Virtually Unlimited Scale

Seamless and Efficient Services

Building on Avere technology allows enterprises to implement a truly global platform that can give researchers seamless access to HPC resources, turning on compute and storage capacity as easily as flipping on a light switch. Wherever users work, they can have a unified view of and access to HPC resources.

The Avere global namespace abstracts storage to enable enterprises to organize data logically rather than geographically. Avere eliminates both latency and data management issues to allow HPC users to store data and run applications both on premises and on the cloud.

The IT department becomes free to follow its own technology roadmap, choosing the solutions and providers that best meet the requirements of the business—without being locked into any particular storage architecture or cloud service. With Avere technology in place, enterprises can seamlessly store data and run applications wherever makes the most business sense.

Cloud-based Cost Savings

Enterprises achieve significant cost savings by moving away from expensive high-end NAS toward more economical storage and cloud-based capacity.

Traditionally, performance requirements for many HPC applications dictated deployment of high-end storage. Today enterprises can deliver that same level of performance with an Avere FXT Edge filer in front of more economical NAS storage and reduce costs by more than 70% when compared to traditional tier-1 NAS.

By bridging on-premises and cloud-based resources, seamless access to nearly infinite compute and capacity with broad options for performance levels and price points is enabled. Enterprises can take advantage of storage tiering both on and off premises, use Avere Cloud Snapshots to back up to the cloud, use low-cost cloud storage for archive, and define policies to automate all of those processes.

Accelerated Workloads, On-demand Scale

The cost and complexity of HPC infrastructure conventionally restricted its use to specialized research. Enterprises implementing a global platform built with Avere technology can more easily provide compute and storage in a utility model that delivers essential performance, nearly infinite and on-demand scale, financial benefits, and manageability to enable more HPC—whether that means running more predictive models, running more concurrent job streams, supporting more researchers, or modeling even larger datasets.

Enterprises can economically scale on-prem storage infrastructure with Avere physical FXT filers and commodity storage. Likewise, HPC teams can take advantage of Avere vFXTs to scale compute and storage performance in the cloud. The cost of HPC infrastructure no longer limits the scope of work researchers, designers, analysts, and other users can undertake.