Most of us can enjoy a good movie on a Friday night, an entertaining TV show after a long day, or an informative podcast in the car. Of course, how many really appreciate the amount of work that goes into bringing them into final production? Media production and post-production applications push the boundaries of computing infrastructures like few other workloads. While ever-faster compute and high-throughput/low-latency networks are the norm, media companies struggle with legacy storage technologies that slow processing times, add complexity, strain productivity, and ultimately cost production companies millions of dollars in missed revenue.

Stellus is changing the game for Media & Entertainment – bringing ultra-fast, hyperscale throughput and performance to modern media. Built from the ground-up for unstructured data, Stellus puts production power back in the hands of digital artists, without relying on outdated storage technology. Stellus replaces block stores, data maps, and data caches with high-throughput key-value stores, key-value-over-NVMe, and algorithmic data placement. The result is support for more simultaneous workloads and streams than any other solution, which shortens project timelines, reduces idle time, and increases profitability and product quality.

Barriers to Better Performance

Media and entertainment workloads continue to demand more. We’re talking about more content, in more formats, to be delivered to more places. There will be more cameras delivering higher resolution, more multi-gigabyte raw video downloads, and more real-time streams. You can expect more virtual reality, more augmented reality, and more 8K video sources generating exponentially more data. Traditional storage architectures can hardly keep up with today’s requirements.

Project requirements are complex, encompassing multiple performance tiers of NAS and SAN storage, along with sprawling cache deployments. As storage capacity and performance requirements grow, these architectures require ever-more resources and more technical workarounds (caching) just to keep workflows running. The result? Longer timelines for rendering and compositing, and frequent idle time for skilled artists waiting for the storage to catch up.
Limitations of Legacy Storage Architectures

Conventional storage architectures suffer from a number of inefficiencies:

- **Wasted resources on east-west traffic**: As media companies add more storage performance tiers, storage systems must spend more and more resources just synchronizing all data traversing from east to west across the namespace.

- **Need for constantly expanding cache**: When digital intermediate finishing (DI), visual effects (VFX) suites, and other applications aren’t getting the performance they need, the traditional solution has been to use a cache tier. This approach allows artists to keep working, but it creates new problems. Caches are only performant when all data can live in the cache; the minute you start having cache misses, performance drops. For applications involving real-time playback, for example, that means artists are now dealing with stuttering video. As your data grows, then your cache and all associated costs and operational complexity grow with it. This happens until the next time you max-out cache capacity and have to do it all over again.

- **Inability to cost-effectively scale**: Today when media companies need to increase performance, they often take the easy approach by adding more capacity. It’s a quick fix, but throwing hardware onto a storage system might not be the most cost-effective way to add the much-needed IOPS.

Legacy, outdated technology is at the root of these inefficiencies. Even the newest all-flash storage hardware relies on decades-old software and file systems that were designed for an earlier time. Effectively, the “brains” of these legacy storage architectures were designed for structured data stored on spinning disk drives using block I/O. The challenge with this approach, especially in M&E, is that the bulk of the most used data is unstructured. As a result, they waste significant resources on converting data between file and block I/O and keeping global data maps synchronized as traffic passes east-west across nodes.
Unleash Extreme Storage Performance: Stellus Data Platform

The Stellus Data Platform sets a new standard for media storage performance, empowering Media and Entertainment companies to support more workloads, more simultaneous playback streams, and faster render times. Unlike architectures that waste resources on tasks irrelevant to modern storage, the Stellus Data Platform is an entirely new file system, built from the ground up for unstructured data and solid-state media.

The Stellus Data Platform replaces block stores, data maps, and data caches with high-performance key-value stores, Key-Value-over-Fabrics, and algorithmic data placement. At the same time, it provides file access across standard protocols like NFS and SMB, as well as newer object storage access methods like S3—all in a storage system that is scalable and ready for hyperscale workloads.

The Stellus Data Platform delivers these key benefits:

- **Extreme performance:** Stellus brings a new level of performance to media workloads, helping companies break through storage bottlenecks and accelerate practically any application. By eliminating the need for file and block conversions, mapping, and cache management, it provides more than double the performance, with 4x lower latency than the fastest competing solutions. In real-world production environments that can translate to running 32 streams or more of real-time uncompressed 4K playback with no dropped frames. Additionally, VFX artists can work in uncompressed playback formats without having to transcode and recode all footage throughout the pipeline. Finally, because there’s no cache or global data maps to sync, the performance you get day one is the same next week, next month, and next year.

- **Simplified architecture:** Stellus delivers high performance and eliminates the caching infrastructure. As a result, studios can substantially reduce the complexity of the storage environment and its associated power, cooling, and maintenance costs. Stellus enabled one real-world VFX company to ditch their cache entirely while doubling performance of their rendering cluster.

- **Scale Through:** With Stellus you don’t have to make the choice to scale up or scale out. You can scale through your performance (throughput) and capacity needs independently. You have the flexibility to keep pace with growing demand without having to invest in resources you don’t yet need. That is, you can increase throughput in 10-GB/s increments by adding Data Managers (DMs), add capacity by adding to the system’s Key-Value Store (KVS) layer, and scale linearly with your need as your requirements grow.

- **Read and write performance parity:** When most storage vendors brag about the performance of their systems, they are quoting read throughput numbers only. That’s because write performance is far more difficult to maintain and is typically just a fraction of read speeds. With Stellus, write performance is about 95% of reads. For real-world applications like volumetric capture, maintaining that level of throughput performance parity makes a huge difference.

- **Superior performance for mixed workloads:** For studios and production companies, Stellus makes it easy to support a diverse range of projects and applications with the same storage infrastructure. For example, using our smallest-footprint (4U) platform you can run capture and ingest, transcoding, real-time 4K playback, and rendering all at once—without dropping frames and all while maintaining consistent performance in the render farm.
M&E Workflow Driven by Stellus Data Platform

Accelerate Production, Transform Economics

Many media companies don’t bother to calculate how much time and resources get wasted trying to work around storage inefficiencies. It’s considered the cost of doing business with modern production and post-production applications—but it doesn’t have to be.

With the ability to provide extreme performance in a simpler and more scalable architecture, Stellus is rewriting the rules for media and entertainment companies. For practically any media workflow, Stellus can keep pace with growing capacity requirements while delivering double (or better) the performance of competing solutions—all with the ability to easily add more throughput as needed.

What does that mean in the real world? Faster project cycles. Lower operating costs. Artists spending far less time sitting idle, waiting for rendering, compositing, real-time playback, and other storage I/O-dependent processes to complete. And ultimately, the ability to complete more work in less time, driving higher revenues and profitability.