

# Build Smarter Models Faster with the Revolutionary Weka File System



## RECORD PERFORMANCE

Set 17 world records in performance for query-response times and aggregate throughput running STAC-M3 Benchmarks



## SUPERIOR TO ALTERNATIVES

16x faster than Optane DAS server, 4.5x faster than all-flash NAS and 2.1x faster than the NVMe-oF SAN with a file system layered on top



## SCALES LINEARLY

Run metadata intensive applications and share data sets concurrently with Monte Carlo simulations and back testing workloads without performance degradation



## DEEP LEARNING

WekaFS transforms NVMe-based flash storage, compute nodes, and interconnect fabrics to meet or exceed the requirements of AI/ML workloads



## EASY MANAGEMENT

Petabyte datasets with small and large files require no performance tuning. Seamless movement of data between hot and cold tiers

It's no secret financial services firms are facing increased competition from all sides. Digital transformation is leveling the playing field for banks, hedge funds, fintechs and other traditional financial services companies. Organizations cannot afford to rest on their accomplishments and must continue to invest in new platforms and technologies that will help them work smarter, faster and more efficiently.

## PUSHING THE BOUNDARIES OF TRANSFORMATION

The changes brought about by the first phase of digital transformation provide a solid platform for financial services organizations to adopt newer technologies that have the power to significantly improve the way they operate. It's difficult to overestimate the impact technologies and workloads like high-performance data analytics, artificial intelligence (AI) and machine learning (ML) have on financial services organizations. They enable better predictive models that allow deeper insights to improve trading decisions, prevent fraud, reduce market risk and more. In this phase of transformation, success is measured on real-time execution of analytics and algorithmic deep learning models.

As these workloads come online, datasets can grow to tens or hundreds of petabytes, and compute resources are expected to scale to support the expanding needs. High-Performance Computing (HPC) using parallel processing and clustered scale-out compute environments are required, and local direct-attached storage is no longer an option. The amount of data far exceeds local storage capabilities and while it's possible to copy and update data in the cluster, it's difficult to manage, and complex to maintain. A shared parallel file system is needed to allow hundreds or even thousands of servers to access the same data sets simultaneously.

## REVOLUTIONARY STORAGE – Weka FILE SYSTEM SOFTWARE

The Weka File System (WekaFS™) is uniquely designed to address the performance challenges of the most demanding data intensive environments. In fact, it has become the de facto storage standard for quantitative and high velocity analytics use cases. WekaFS is a fully parallel and distributed file system, built with a clean, modern design approach that maximizes performance using NVMe flash technology and fast networks. Both data and metadata are distributed evenly across the storage cluster to ensure massively parallel access to NVMe drives. With a single namespace that spans on-premises storage and the cloud, WekaFS delivers record-breaking performance that is orders of magnitude better than a local file system and 10x that of traditional NAS or SAN.

## WekaFS IS ROCKET FUEL FOR FINANCIAL SERVICES INNOVATION

Running the STAC-M3 "Tick Analytics" Benchmarks, a standard for many financial organizations. WekaFS set 12 STAC-M3 world records for mean query-response times and 5 world records for aggregate throughput. The "Kanaga" suite of STAC-M3 benchmarks presents multiple years of market data to measure the volume-scalability of a database stack. The ability of a tick analytics stack to handle increasing volumes of historical data is essential to today's trading organizations as market data volumes can quickly grow. The Kanaga results in Figure 1 shows that WekaFS is the clear performance leader when compared to top storage alternatives.

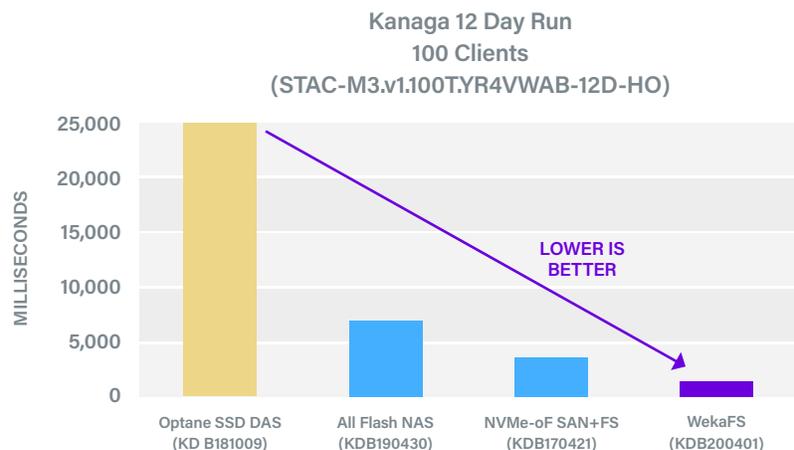


Figure 1 – Volume Weighted Bid for a random 1% of data for 12 Days over a 5-year data set

The benchmark is a read-heavy workload that stressed the storage I/O and metadata capability. WekaFS was 16x faster than the Optane DAS server, 4.5x faster than all-flash NAS and 2.1x faster than NVMe-oF SAN with a file system layered on top. The system under test used HPE servers and had a combined performance density of up to 113GB/sec available bandwidth to the client nodes, a maximum observed read throughput of 54.7GB/sec, and 8.8 million 4K IOPS in 10U, with the ability to fully distribute data, metadata, and system services.

Distributing both data and metadata evenly across the storage cluster allows performance to scale linearly to fully saturate any CPU or GPU based compute cluster. This means users can run metadata intensive applications and share data sets concurrently with Monte Carlo simulations and algorithmic back testing workloads without performance degradation. The full STAC Report can be found at [STACresearch.com/KDB200401](http://STACresearch.com/KDB200401).

Built for enterprise-grade HPC, WekaFS is resilient and delivers the highest-bandwidth, lowest-latency performance to any InfiniBand or Ethernet-enabled CPU or GPU-based cluster. It's POSIX-compliant and leverages modern architectures such as ultra-low-latency NVMe-over-Fabrics (NVMe-oF) and massively distributed metadata. An optional integrated object-based data lake is possible allowing for seamless movement of data between hot and cold tiers with the cost benefit of hard disk drives for massive scalability. A rich enterprise feature set including snapshots, clones, encryption, authentication, and backup via its snap-to-object, cloud-bursting and more.

Financial Services customers who use WekaFS enjoy the benefits of full cloud integration and the ability to leverage public cloud compute resources, including automated tiering and cloud bursting. As an added bonus, the WekaFS solution significantly simplifies storage management and infrastructure. Many storage alternatives require complex performance tuning to achieve the required characteristics but WekaFS is simple to manage out-of-the-box. Figure 2 provides a high-level view of WekaFS in a production environment to build smarter models for demanding financial services organizations.

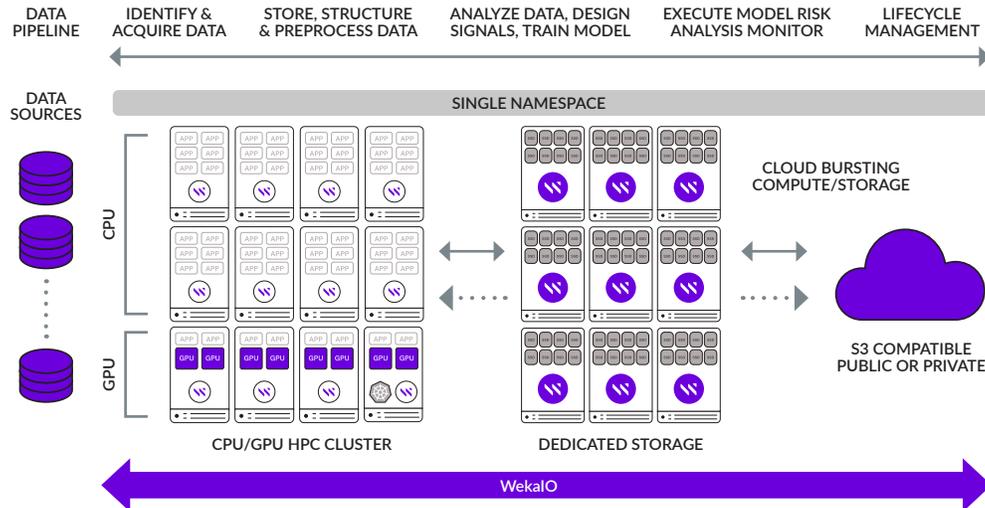


Figure 2 - WekaFS Delivers Local Disk Performance to the HPC cluster

Find out more about Weka's offering, and explore the possibilities of accelerating your performance hungry financial services workloads. Go to <https://www.weka.io/solutions/financial-services>.