

DDN[®] STORAGE

SUCCESS STORY

ACCELERATING FINANCIAL SERVICES

DDN Delivers Big Rewards from Big Data in Backtesting, Risk Management, Pricing & Fraud Detection



DDN'S MASSIVE PARALLELISM, REAL TIME ARCHITECTURE, ABILITY TO SCALE UP OR OUT, DELIVER UP TO 8X THE PERFORMANCE OF TRADITIONAL STORAGE AND UP TO 2X THE PERFORMANCE OF FLASH

- More test iterations, against more data in less time => **More profitable trading strategies, faster**
- Calculate VaR for Thousands of securities in seconds => **Accurate, actionable intra-day risk measurement**
- Faster, consolidated analytics for mixed IO => **In-transaction "envelope" fraud identification**

THE MOST ADVANCED STORAGE PLATFORMS FOR BIG DATA

Big Data is here and it's unruly. Capacity and performance requirements are exploding and increasingly more difficult to predict. Data patterns have changed, requiring new, massive multi-threaded storage processing capabilities designed for today's multi-core, multi-application sets. Innovative, award winning and proven in the world's largest and most demanding production environments, DDN's SFA utilizes the most advanced processor technology, busses and memory with an optimized RAID engine and sophisticated data management algorithms. Fusing unprecedented IOPS and bandwidth performance with the most efficient capacity management, SFA is the proven storage platform foundation for today's data intensive applications sets.

CUSTOMER 1 – A GLOBAL HEDGE FUND



This US-based Global Hedge Fund needed to catch multiple GB of data every trading day from multiple exchanges and support close to 50 quantitative analysts using hundreds of servers to create and test equity trading strategies.

IT management was under pressure to solve the increasingly-crippling bottleneck in market data processing and quantitative research results cause by the back-end storage infrastructure. Their traditional NAS filers, which were up to date and from a top

enterprise vendors, were falling behind in market data capture – an alarming situation since the firm intended to add exchange and social data sources. Model backtesting speed was also hampered by data access performance on the filers slowing the productivity of the quantitative research team. Any attempt to improve performance by adding more filers resulted in more systems to manage and isolated data silos so that copying data for multi team use was consuming a considerable percentage of network and storage resources.

After evaluating alternatives the Hedge Fund purchased a DDN EXAScaler[®] Parallel File System Appliance based on the Lustre file system. The 600TB appliance delivers up to 30GB/s through the parallel file system to support market data ingest requirements for today and tomorrow.

The multi-GB performance to each client speeds analytics work, and the ability to run all processes against a centralized resource means no more data silos. With all market data consolidated on one platform that is 6x the speed of their previous infrastructure, the fund is testing 3 times the number of strategies in the same amount of time on an infrastructure which has a lower overall cost of ownership.



SFA12KX™ - THE MOST ADVANCED STORAGE PLATFORMS FOR BIG DATA

The SFA12KX product family is designed to derive peak performance out of your compute investments with a massive I/O infrastructure and multimedia disk drives that maximize system performance and lower storage investment costs. The SFA12KX product family is purpose-built to simplify and tame big data growth, enabling you to architect and scale your environment more intelligently, efficiently and cost effectively than ever before.



SFA7700™ - THE HYBRID FLASH STORAGE APPLIANCE WITH APPLICATION-ACCELERATION TO MAXIMIZE BIG DATA INSIGHTS

The SFA7700 is a hybrid flash storage appliance, purpose-built for Big Data requirements, that uniquely enables organizations resolve today's key storage challenges. It is designed to allow you to start small and extract maximum value from your Big Data. At the core, is the hyper-optimized SFA Operating System, running in

two hybrid controllers that leverage SFX[™] technology to extract the maximum performance and value from hybrid (spinning disk & flash) media. SFX integrates application-centric intelligence with the power of flash media to marry the performance of flash with the economy of hard disk drives.

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We couldn't get a reliable run-time on large enterprise storage and filers.”

Engineering Director

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CUSTOMER 2 – A LARGE U.S. PROPRIETARY TRADING FIRM



A large U.S. proprietary trading firm specializing in derivatives uses DDN as its worldwide data repository for market, economic and company data.

The team in charge of strategic technology decisions knew their previous infrastructure no longer fit business requirements. Of their multiple trading groups, each had individual data repositories, leading to imperfect and differing market views between teams, at a very high cost of unshared infrastructure to the company.

To create richer and more uniform data inputs across departments, decrease infrastructure costs through consolidation and build a solid foundation for future growth, SFA® storage engines were selected with the IBM® GPFS parallel file system.

This solution delivers more than a 3x improvement in algorithm development speeds. Our customer is now able to leverage almost a petabyte of data quickly and efficiently across multiple teams. The high performance repository is complemented by a large and growing DDN-based archive solution, which is extremely cost-effective and stores less active data, worldwide.



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With DDN... a key analytics task now has a 5X faster runtime ... The program trading group maintains it themselves.”
Engineering Director

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CUSTOMER 3 – INVESTMENT BANKING ARM OF A LARGE INTERNATIONAL BANK



With significant research functions based across several continents, this investment banking arm of a large international bank needed a solution that could feed massive amounts of data in parallel to a server farm consisting of hundreds of program trading clients.

The senior leadership of the strategic technology team had already recognized parallelism as the right approach. They discarded their previous generation platform of multiple NAS filers and implemented a parallel file system from a major server vendor, running on top of that vendor's high-end storage. The problem with this approach was that: it quickly ran out of steam and in less than a year was operating at about one-third the desired performance, unable to accommodate data and client growth. No amount of upgrades or optimization would overcome this delta in performance requirements, so the leadership team started benchmarking alternatives.

The clear winner was the GRIDScaler™ appliance, which embeds an enterprise parallel file system and NAS inside DDN's SFA storage engines for a compact, easy-to-deploy and manage parallel file system. In testing, and then in production, GRIDScaler delivered a level of performance that reduced the time to completion on key analytics metrics by over 80 percent.

The bank also liked that DDN an enterprise parallel file system and NAS while WOS® (object storage solution) made the delivery of secure, private cloud data sharing among its multiple international sites simple and easy.



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Before we rolled out DDN, our NAS farm couldn't keep up with the growth in the market and our business. With DDN, our traders now are getting new strategies into the market, faster.”

Engineering Director

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CUSTOMER 4 – A LARGE U.S. PROPRIETARY TRADING FIRM

A large U.S. proprietary trading firm, specializing in high frequency trading, recognized early on that they needed to move away from their direct attached and NAS storage systems. This architecture didn't allow them to access and share petabytes of data across multiple types of high-performance trading groups, including: teams in currencies, derivatives, international equities and technology equities.

An extreme need for speed also was identified, since our customer's success and competitive advantage depended upon bringing new strategies to bear quickly (while phasing out unsuccessful ones) in real-time (or as close as possible). A parallel architecture was selected providing two key criteria to meet these goals: 1) a global namespace for more efficient data gathering and sharing, and 2) parallel I/O to remove the latency associated with sequential jobs running on traditional NAS architectures.

Several generations of parallel infrastructure were tested, based on storage and parallel file system, including offerings from major server and storage vendors. However, in production conditions, neither could meet the minimum performance requirements for current and projected needs, which are in the petabytes and GB/s of sustained I/O performance.

The firm was impressed with DDN's massively parallel architecture and open platform approach to parallel file systems, which would permit infrastructure changes without forcing them to replace their entire investment. The company evaluated and then selected the GRIDScaler™ appliance, which tightly integrates an enterprise parallel file system with high performance SFA storage. This solution which surpassed their performance, availability, scalability and cost requirements. The CIO also liked DDN's Python-based infrastructure and features, which would support possible future directions, such as embedding applications right inside the storage, cutting the I/O path process steps by nearly half to deliver much lower latency.



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ABOUT DDN®

DataDirect Networks (DDN) is the world's leading big data storage supplier to data-intensive, global organizations. For more than 15 years, DDN has designed, developed, deployed and optimized systems, software and solutions that enable enterprises, service providers, universities and government agencies to generate more value and to accelerate time to insight from their data and information, on premise and in the cloud. Organizations leverage the power of DDN technology and the deep technical expertise of its team to capture, store, process, analyze, collaborate and distribute data, information and content at largest scale in the most efficient, reliable and cost effective manner. DDN customers include many of the world's leading financial services firms and banks, healthcare and life science organizations, manufacturing and energy companies, government and research facilities, and web and cloud service providers. For more information, visit our website www.ddn.com or call 1-800-837-2298.