

SFA10K-X™

The World's Highest Performance & Most Scalable Storage Platform

Fusing unprecedented IOPS and bandwidth performance with highly efficient capacity management, this is the storage foundation for data intensive application sets.

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 Storage Fusion Architecture (SFA) utilizes today's advanced processor technology, busses and memory with an optimized RAID engine and sophisticated data management algorithms. This storage system is designed to derive peak performance out of your compute investments with a massive I/O infrastructure and multi-media disk drives that maximize system performance and lower storage investment costs. The SFA10K-X 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.



BUSINESS ADVANTAGES

- ▶ **Industry Leading Performance & Capacity**
Significantly reduces capital and operational expenses with fewer systems to purchase and manage
- ▶ **Enterprise-class SATA Data Protection**
Makes large SATA pools with high duty-cycles reliable at half the price of SAS or FC drives
- ▶ **Industry Leading Density**
Reclaim valuable floor space, reduce power and cooling costs
60 Drives/4U enclosure; 1.8PB/Rack
- ▶ **Reduces Energy Consumption**
By 50% eliminating unnecessary storage enclosures, switches, fans and power supplies
- ▶ **Supports the Most Drives**
Up to 1,200 disk drives in a single storage system for simple, cost-effective scalability
- ▶ **Largest Scalable Storage for Virtualized Environments**
Certified with VMware ESX 4.0 and 4.1
- ▶ **Scales Incrementally**
Add as few as 2 disk drives at a time

TECHNICAL ADVANTAGES

- ▶ **Balanced Storage Performance**
For both highly transactional and high-bandwidth applications
- ▶ **SATAssure™ Real-Time Error Detection & Correction**
Increases data resiliency and reliability with little performance impact
- ▶ **ReACT™ Intelligent Cache Management**
Analyzes & optimizes I/O traffic in real time to write large file sequential data directly to disk and preserve valuable cache for random IO transactions
- ▶ **Unparalleled Back-end SSD Support**
Fully utilize SSDs for unprecedented levels of sustained random IOPS
- ▶ **Single System Multi-Tiered Storage**
Intermix SAS, SATA and SSD drives in the same enclosure
- ▶ **Journalled Drive Rebuilds**
Reduces rebuild times by only requiring new/changed blocks to be written to recoverable drives

Storage Fusion Architecture

As the leader in Big Data, we provide a number of innovations that increase performance, efficiency and data protection. Designed for multiple classes of data and storage performance requirements, this unique multi-RAID architecture combines up to 1,200 SATA, SAS and SSD disks into a simply managed, multi-petabyte platform. Data resides on the optimal disk technology according to priority and access pattern, while selecting the appropriate RAID level to maximize performance and cost-effectiveness. In the background, the system performs multiple levels of parity generation and real-time data integrity verification and error correction without impacting application performance.

▶ **Massively Multi-Threaded Storage Processing**

- Ensures that both host I/O operations and background data management functions are delivered at the highest speeds possible. High-speed storage processors deliver world-leading throughput and IOPS, while also handling drive rebuilds and error detection & correction with virtually no performance impact to applications.

▶ **Balanced Storage Performance**

- Unpredictable storage growth demands a versatile storage foundation. The SFA10K-X is ideal for the most demanding transactional workloads with over 800,000 sustained random IOPS and is also capable of delivering storage bandwidth over 15GB/s.

▶ **Simple Scalability: Ready for the Content Explosion**

- Capable of supporting up to 1,200 drives behind a single storage system, the SFA10K-X is truly a petabyte-class system. Add as few as 2 drives at a time for simple, online volume growth.

▶ **Large Cache to Accelerate Read & Write I/Os**

- With 16GB of high-speed, battery-protected storage cache, the SFA10K-X is designed to accelerate heavy small IOP read & write requests.

▶ **Unrivalled Storage Density**

- With over hundreds of Petabytes deployed in high-density storage packaging, all DDN systems are designed for efficient power and floor space utilization. The SFA10K-X is capable of housing up to 1.8 Petabytes of data in a single data center rack.

▶ **Unprecedented Support for SSDs**

- The SFA10K-X utilizes 160 back-end SAS channels to enable massive sustained IOPS on SSDs, eliminating the need for external small IO accelerators.

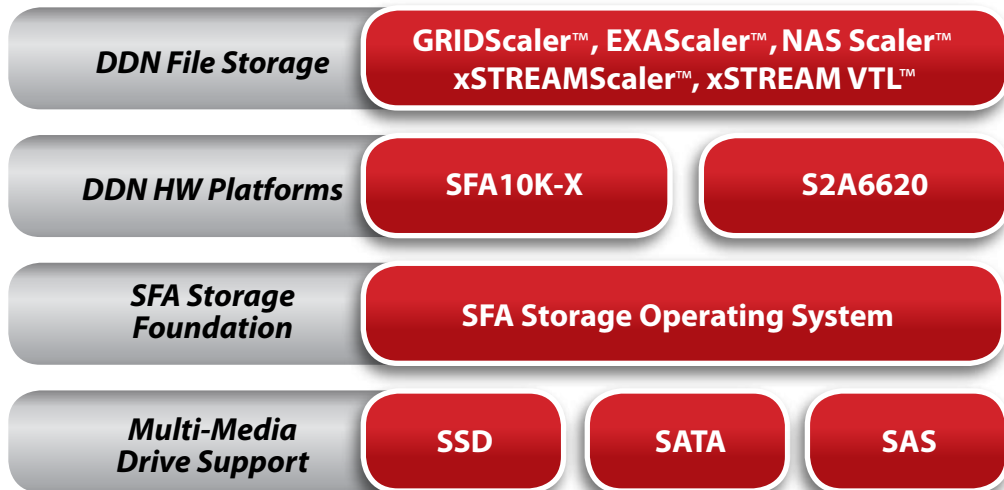
▶ **Green Storage**

- High-density packaging requires only 1/4th of the storage enclosures, power supplies and fans that traditional storage systems do, dramatically reducing storage energy costs up to 50%.

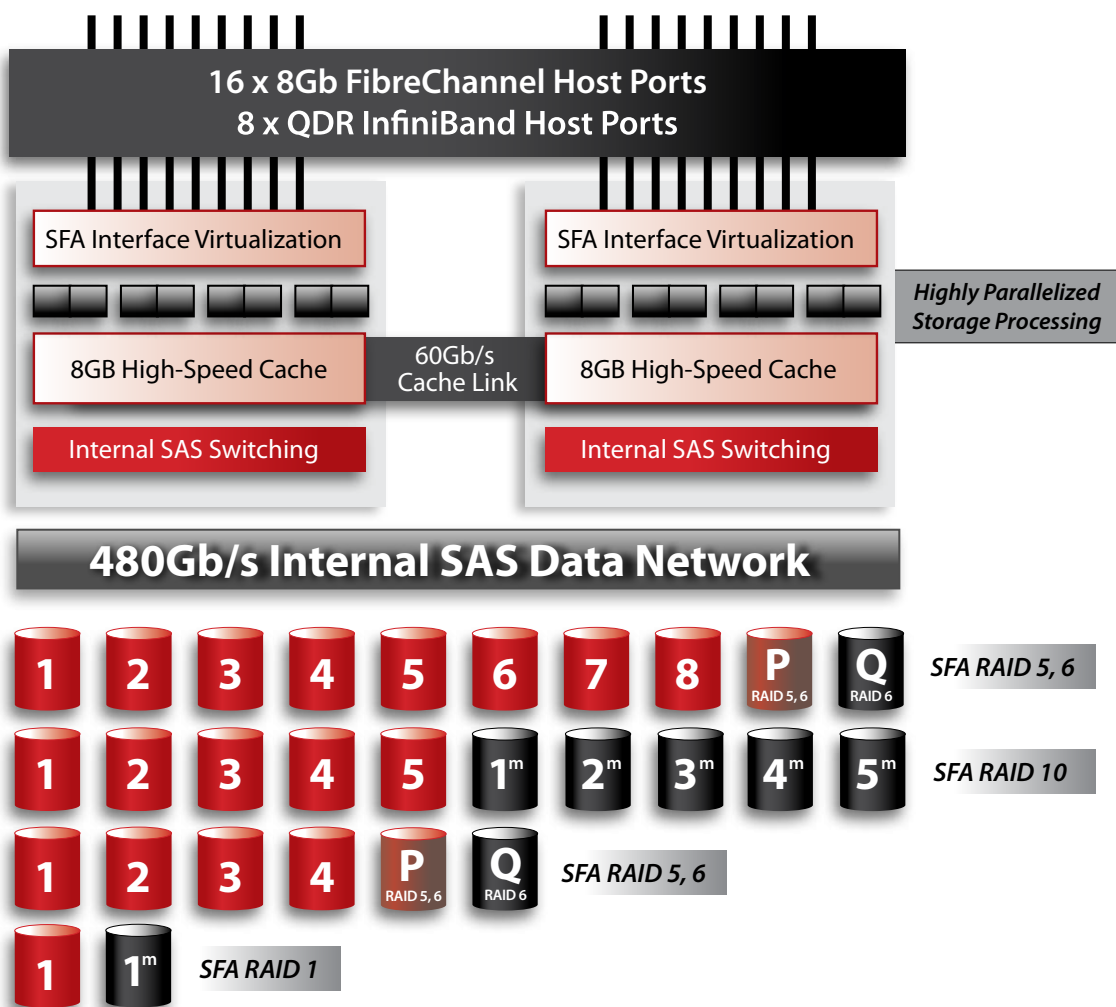
▶ **Designed for Storage Tiering**

- Intermix SAS, SATA and SSD drives within a single, scalable platform. Enable storage consolidation and eliminate storage islands and system sprawl by housing archive (SATA) and transactional (SAS/SSD) tiers in this single and ultra-dense, high performance system.

Storage Fusion Architecture is a revolutionary storage design from DDN, engineered for the next 10 years of application enablement.



The design concepts of SFA are delivered across multiple controller and storage device platforms to encompass a comprehensive storage portfolio featuring DAS, SAN, NAS and VTL storage access.



Optimized Drive Support

SATA
 Leading Capacity and Cost-Optimized Bandwidth



SAS
 Balanced Mix of IOPS, Capacity & Bandwidth

SSD
 Delivering Unrivaled IOPS for Transactional Applications

Storage Fusion Architecture supports multiple, high-speed RAID levels within a single system. Designed for multiple classes of data and storage performance requirements, SFA multi-RAID architecture combines up to 1,200 **SATA, SAS and SSD** disks into a simply managed architecture where the optimum media serves, stores & archives prioritized data.

With over 48GB/s of internal system bandwidth, the SFA10000 can perform multiple levels of parity generation, drive correction and data integrity verification without detracting from an application's performance.

Choose from these Four system configurations to enable full system performance, capacity and the highest levels of fault tolerance.

5 ENCLOSURE SYSTEM	5 ENCLOSURE SYSTEM	10 ENCLOSURE SYSTEM	20 ENCLOSURE SYSTEM
 <ul style="list-style-type: none"> ▶ Up to 120 SAS 2.5" Drives ▶ Up to 108TB in 18U 	 <ul style="list-style-type: none"> ▶ Up to 300 Drives ▶ Up to 900TB in 28U 	 <ul style="list-style-type: none"> ▶ Up to 600 Drives ▶ Up to 1.8PB in 48U 	 <ul style="list-style-type: none"> ▶ Up to 1,200 Drives ▶ Up to 3.6PB in 88U

System Features	Active/Active Storage Controllers RAID 6 8+2, 4+2 RAID 5 8+1, 4+1 RAID 1 1+1 Sequential Read and Write Performance over 15GB/s Random 4K IOPS of 1 Million+ to cache and over 800,000 Sustained to media. Max Drives 1,200 Max Capacity 3.6PB Cache 16GB - Battery backed and mirrored Client Support Windows, Linux, Solaris and Mac OSX	
Active/Active Controller Storage Host Ports	16 x 8Gb Fibre Channel Host Ports (Option) 8 x 40Gb InfiniBand Ports (Option)	
Standard Software Features	LUN Mapping and Masking, Intelligent Write Striping Port Zoning Detection, SATAssure Data Integrity Check/Correction FA CLI/GUI, Pager and E-Mail Fault Console with SNMP Notification	
Optional DDN Storage Gateways	GRIDScaler Parallel File Storage System, EXAScaler Parallel File Storage System xSTREAMScaler SAN and LAN Storage System, NAS Scaler Storage System, xSTREAM VTL Virtual Tape Library	
Environmental Attributes – Active/Active Dual Controllers (Couplet)	Dimensions: Height 8RU, 14.0" (35.6 cm) (includes 2 x External Cache BBUs) Width 17" (43.2 cm) Depth 25.5" (64.8 cm) Average Power 854 W nominal, 1002 W peak Average Cooling 4095 BTU/hr Voltage Range 200-240V Operating Environment 10 Deg C – 35 Deg C Weight 120lbs (54.5Kg) Storage Managers only (Couplet), 248lbs (112.5Kg) with redundant BBUs	
Available Back-end Drive Enclosures		
	SS7000	SS2460
Description	4U, 60 Drive Enclosure	2U, 24 Drive Enclosure
Supported Drive Types	SSD, SAS and SATA	SSD, SAS and SATA
Supported Drive Sizes	3.5", 2.5"	2.5"
For additional details on the SS7000 or SS2460 drive enclosures, please see their respective data sheets at ddn.com .		

Learn more at ddn.com/products/sfa10000

DataDirect
NETWORKS

9351 Deering Avenue
Chatsworth, CA 91311

1.800.TERABYTE

www.ddn.com