

The Next-Generation of Unstructured Data Leadership



SFA 10000

Storage Fusion Architecture

As the world's leading storage provider for performance and capacity bound applications – DataDirect Networks (DDN) has a rich history of proven industry leadership in solving extreme storage challenges. Over the past 3 years, DDN has diligently been reinvesting all of its storage successes into developing the next generation of Extreme Storage.

Built from the experience developed by supporting the largest web sites, archive facilities, 100s of the world's largest supercomputers and over 450 media production facilities - DDN has understood and planned for the future of storage.

The future is Storage Fusion Architecture or SFA...

Breaking Down Barriers by Delivering Balanced Throughput and IOPS

The unstructured data landscape is changing. For years, the storage industry has designed systems that are optimized for either transaction-based computing or large file serving (throughput). DDN has focused on and become the leader in the large file, throughput market. During this time, the evolution of processor technology has ushered in multi-core systems to increase compute capacity and performance. Multiple simultaneous (multi-threaded) throughput operations tax storage systems as they tend to look like a mixed workload requiring high IOPS rather than simply high throughput. Storage systems must now be able to respond to heavily threaded I/O patterns by delivering transaction-optimized extreme storage bandwidth as well as high throughput.

10 years ago, DataDirect Networks defied conventional wisdom by designing storage systems that write as fast as they read and that deliver highly concurrent levels of streaming bandwidth. In 2009, DataDirect Networks is again revolutionizing storage by offering a storage system that delivers leadership levels of both throughput and IOPS.

SFA 10000 Storage Highlights

Data Management	Cache Mirroring & Coherence, Cache Battery Protection, SATAssure Data Integrity Protection
RAID Levels	RAID 1, 5, 6 (RAID 10 in Q4 2009)
Drive Support	SATA, SAS, SSD
Throughput (block)	10GB/s
IOPs (block)	1,000,000 (cache), 300,000 (disk)
Max Capacity	1,200 Drives, 2.4 Petabytes per Array

Next Generation Storage Fusion Architecture

The DataDirect Networks' Storage Fusion Architecture fuses the best parts of today's advanced processor technology, busses and memory architecture with an optimized RAID engine and data management algorithms. These are tightly integrated to derive peak performance out of a massive IO infrastructure and multi-media disk drives to maximize system performance and lower storage investment costs. The fusion of unprecedented levels of bandwidth and IOPS enable this system to serve as the storage foundation for any Extreme Storage application set.

Massively Multi-Threaded Storage Processing

A multi-threaded storage processing architecture ensures that both host I/Os and background data management functions are delivered with the highest speeds possible.

The SFA10000's high-speed storage processors are capable of delivering world-leading throughput and IOPS while also handling drive rebuild and correction with no application impact.

Balanced Storage Performance

Unpredictable storage growth demands a versatile storage foundation. The SFA10000 is ideal for the most demanding transactional workloads and is also capable of delivering extreme storage bandwidth over 10GB/s.

Simple Scalability: Ready for the Content Explosion

Capable of supporting up to 1,200 drives behind a single storage system, the SFA10000 is truly a petabyte-class system. Add as few as 5 drives at a time for simple, online volume growth.

Large Cache to Accelerate Read & Write I/Os

With over 16GB of high-speed, battery-protected storage cache, the SFA10000 is designed to accelerate heavy read & write requests.

Unrivalled Storage Density

With over 200PB deployed in high-density storage packaging, all DDN systems are designed for efficient power and floorspace utilization. The SFA10000 is capable of housing up to 1.2 Petabytes of data in a single data center rack.

Intelligent Write Parallelism

The SFA10000 is built with a data-aware storage engine – designed to intelligently parallelize large data to achieve optimally efficient storage bandwidth.

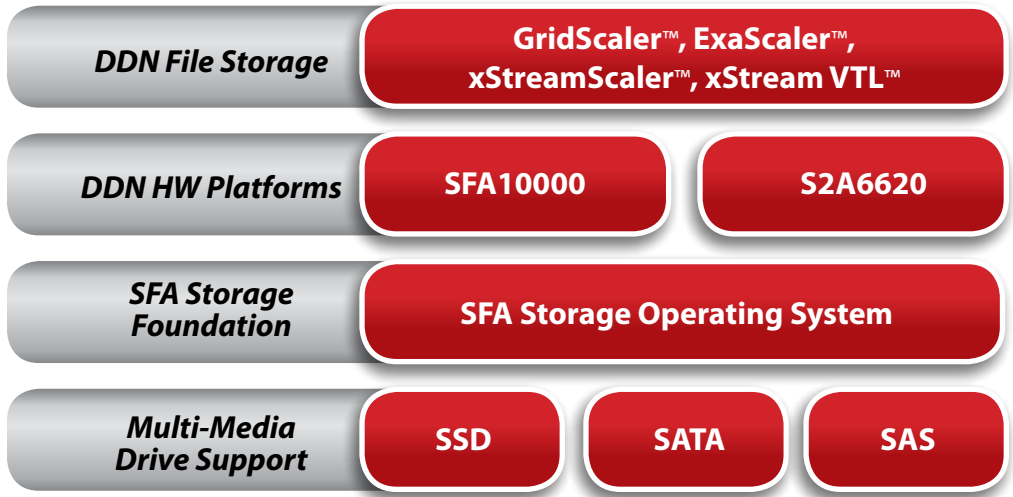
Green Storage

Compared to traditional storage systems, the SFA10000's high-density packaging requires 25% of the storage enclosures, power supplies and fans to dramatically reduce storage energy costs by up to 50%.

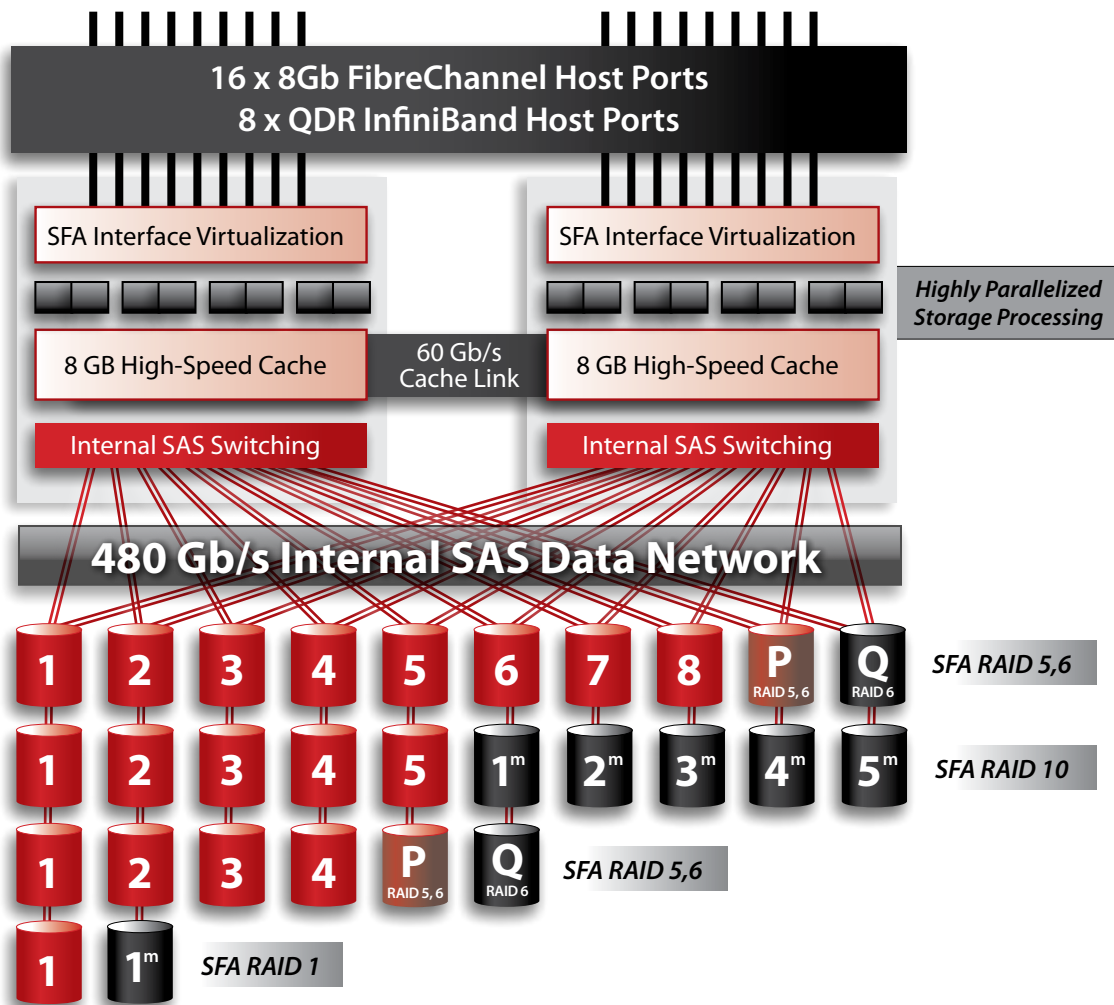
Designed for Storage Tiering

With the ability to mix SAS, SATA and SSD drives within a single, scalable platform – the SFA10000 enables storage consolidation and is capable of housing archive (SATA) and transactional (SAS/SSD) tiers to eliminate storage system sprawl.

Storage Fusion Architecture is a completely new storage design from DDN – engineered from the ground up 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 Unrivalled 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.

Extreme Storage applications require the highest levels of data storage capacity storage density. With over 200 Petabytes of Extreme Storage deployed worldwide, DDN systems are designed to scale easily during planned or unexpected unstructured data growth.

Three primary system configurations are available with the SFA10000 to enable full system performance, capacity and the highest levels of drive enclosure fault tolerance.



5 Enclosure System
Up to 300 Drives
Up to 600TB in 28U



10 Enclosure System
Up to 600 Drives
48U



20 Enclosure System
Up to 1,200 Drives
88U

<p>System Features</p>	<p>Active/Active Storage Controllers RAID 6 8+2, 4+2 RAID 5 8+1, 4+1 RAID 1 1+1 RAID 10 Available Q4, 2009</p> <p>Sequential Read and Write Performance of up to 10GB/s Random IOPS of up to 1M (cache), 300,000 (disk) Max Drives 1,200 Cache 16GB - Battery protected Client Support Windows, Linux, Solaris, AIX, Mac OS</p>
<p>Active/Active Controller Storage Host Ports</p>	<p>16 x 8Gb Fibre Channel Host Ports (Option) 8 x 40Gb InfiniBand Ports (Option)</p>
<p>Standard Software Features</p>	<p>LUN Mapping and Masking, Intelligent Write Striping Port Zoning Detection, SATAssure Data Integrity Check/Correction SFA CLI/GUI, Pager and E-Mail Fault Console with SNMP Notification</p>
<p>Optional DDN Storage Gateways</p>	<p>GridScaler Parallel File Storage System, ExaScaler Parallel File Storage System xStreamScaler SAN Storage System, xStream VTL Virtual Tape Library</p>
<p>Environmental Attributes – Active/Active Dual Controllers (Couplet)</p>	<p>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)</p> <p>Average Power 1200W Average Cooling 4095 BTU/hr Voltage Range 200-240V Weight 120lbs (54.5Kg) controllers only, 248lbs (112.5Kg) w/BBUs</p>
<p>Environmental Attributes – 4U 60-Drive Enclosure</p>	<p>Supported Drive Types: SSD, SAS and SATA Supported Drive Sizes: 3.5", 2.5" Dimensions: Height - 4RU, 7.0" (17.8 cm) , Width - 17.56" (44.6 cm), Depth - 36" (91.4 cm) without bezel: 42" (107 cm) and cable management arms</p> <p>Average Power 1750W Average Cooling 5973 BTU/hr Voltage Range 85-264 VAC Weight 240lbs (109 Kg) w/drives, 120lbs (54.5 Kg) w/o drives</p>
<p>Certifications</p>	<p>UL, CE, CUL, C-Tick, FCC</p>