DDN®
AI · BIG DATA · HPC

Data Sheet

SFA18KX/SFA18KXE

World's Fastest Block Storage with Embedded Application Option

Fastest Performance

- 3.2 million IOPS, 90GB/s in 4U
- Highly-optimized Internal PCIe fabric and 12Gb back-end SAS fabrics ensure fast, low latency data access
- Latest networking connectivity options for current environment support and future-proofing
- Unique embedded application options for ease-of-management and lower latency

Highest Density

- Unprecedented density per U, per system and up to 13PB in a single rack

Greatest Protection

- Scalable, declustered RAID provides superior rebuild times, higher data availability, and protection for new large format drives

Simplest at Scale

- Significantly reduces costs and complexity – fewer ports, cables and network devices lowers acquisition, and administrative costs by up to 70%
- Start small and scale up or out with your choice of building block

At up to 3.2 million IOPs and 90GB/sec from a single 4U appliance, the SFA18KX® is the fastest storage solution in the industry today, and delivers the highest density available with the ability to drive an unmatched number of flash (NVMe and SAS) devices and spinning drives in the least amount of space. This extreme level of density makes the SFA18KX ideal for data centers with limited space, or any high-performance environment wanting to be able to expand capacity without adding the complexity of many appliances to manage and the cost of powering and cooling a large number of controllers.

Data Growth is a Challenge and a Strategic Opportunity

Data-intensive Enterprise and HPC communities recognize that one of the biggest challenges we face is the ability to manage and take advantage of huge data growth. Compute performance grows at a much faster rate than storage media performance, and data is growing faster than compute, so it is no surprise that the majority of users agree that performance is the number one storage and Big Data challenge, and that storage has become the most strategic part of the high performance data center.

Faster Drives and Interconnects do not Solve the Problem

There are several technologies that will each help in at least one dimension of the problem: access, performance or growth. New flash products raise the performance of an individual drive. Private, public, and hybrid cloud offer some cost and capacity relief to certain classes of data. Higher performance networks will drive data into and out of compute faster. New technologies like burst buffers will speed applications. But each of these alleviates only one part of the problem.

Hyper-Converged Platform Accelerates and Balances New Technology

The revolutionary SFA18KX is the highest performance block storage and hyper-converged platform in the industry today with an architecture that harnesses the power of the latest technologies, accelerates them with DDN high-performance software features and balances them to deliver the fastest performance with the lowest latency.

Declustered RAID

As disk and solid state drive densities continue to grow, limitations in the flexibility of traditional RAID configurations become apparent. Constantly increasing drives sizes mean that drive rebuild times are increasing as well. In traditional RAID rebuilds are limited by reading from 9 disks to write to one. SFA Declustered RAID (DCR) significantly improves rebuild performance by increasing the pool of disks which participate in backing a redundancy group, allowing reading and writing to many times the RAID member count (eg 10 disks in 8+2). DCR allows for the striping of data across a much larger set of physical disks than was previously available in traditional RAID and greatly increasing the parallelism of drive rebuilds. It is this parallel process that enables rebuilds to run much faster than traditional RAID. In addition to decreasing recovery times, DCR can also result in increased storage efficiency and higher IOPs performance.

Configurations Start Small and Scale on Demand

SFA18KX building blocks start in the hundreds of terabytes and scale to over 25 petabytes. Select the building block size best suits your requirements profile across IOPs, streaming bandwidth, capacity and number of devices under management. The SFA18KX performance and density enables a smaller solution footprint and with a lower controller-to-drive ratio, power and cooling efficiency are increased, while reducing administrative complexity and cost.

4RU	24RU	44RU	84 RU
Up to 72 Drives	Up to 522 Drives	Up to 972 Drives	Up to 1,872 Drives

Technical Specifications

System Features	Active-Active Storage Controller in Single 4RU enclosure; Supported Drives: Up to 1,872; Max Capacity: drive and enclosure dependent (currently 25.5PB)
Host, Storage Fabric and Network Ports	**SFA18KX:** 16x EDR/HDR100* InfiniBand™ Ports **SFA18KXE:** 16x EDR/HDR100* InfiniBand™; 40/100 GbE
System Fabric and Expansion Ports	32x Mini-SAS HD ports; (128 lanes of 12Gb SAS) +8 Mini-SAS HD expander ports
Software Features	LUN Mapping and Masking, Intelligent Write Striping, Read QoS, Port Zoning Detection, Data- At-Rest Encryption, DirectProtect Data Integrity Check/Correction, interface options (SSH, CLI, web based GUI, Python API), state change messages (via e-mail, SNMP trap and syslog).
Drive Enclosure Models	SS9012: 4U, 90 drive slot (+0, +5, +6, +8, +10, +16, +20)
Supported RAID Levels and DCR Configurations	DeClustered RAID (DCR) supports erasure coding schemas: RAID 6 8+2, 4+2; RAID 5 8+1, 4+1; RAID 1 1+1, DCR pool sizes from 2 to 900 drives

*X-variant is HDR100 (March 2020 release), non-X remains EDR

About DDN®

DataDirect Networks (DDN) is the world's leading big data storage supplier to data-intensive, global organizations. DDN has designed, developed, deployed, and optimized systems, software, and solutions that enable enterprises, service providers, research facilities, and government agencies to generate more value and to accelerate time to insight from their data and information, on premise and in the cloud.

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