

# Kaminario K2 All-Flash Storage Array

K2 is the most cost-effective, no-compromise storage, with consistent and predictable performance and support for physical and virtual mixed workload environments

K2 combines Scalable Performance Storage Architecture (SPEAR™) software with best-of-breed, off-the-shelf enterprise hardware components to create a premier all-flash storage array. Designed for the midrange enterprise market, K2 offers a complete set of features on a platform that leverages the latest innovations in storage media, processing, networking and virtualization.



## K2 provides:

**Storage Efficiency.** Flexible scale-out and scale-up architecture is based on a fully active/active design. High density of up to 30TB/U, with the lowest metadata footprint and the highest RAID utilization in the market.

**Scalability.** The only all-flash storage array that supports both, scale-up and scale-out, K2 enables organizations to start small from 7TB to 90TB in just 4U and grow seamlessly to 720TB in 26U. It facilitates linear growth in both capacity and performance while keeping consistently low latency.

**Non-Disruptive Upgrades (NDU).** Hardware expansions and software enhancements can be deployed without interfering with the service and with no dependencies on maintenance windows. Upgrades can be performed with a mix and match of controllers and SSDs.

**Optimized for mixed workloads.** Global adaptive block algorithm allows the system to automatically adapt to support OLTP, OLAP, virtualized and VDI environments without compromising IOPS or bandwidth.

**Global Selective Inline Deduplication.** Deduplication can be turned on for VDI and virtualized workloads, and turned off for OLTP or OLAP workloads where deduplication has little or no effect.

**Inline Compression.** Highly efficient byte-aligned inline compression reduces the physical data footprint on the flash media.

**Thin Provisioning.** All base volumes, snapshots and replicas are thin provisioned, reducing the required amount of capacity in the initial purchase and allowing it to grow over time.

**Encryption.** The always-on encryption provides security for data-at-rest with no impact on performance, protecting against data theft.

**Enterprise-Class Resiliency.** Resiliency features include high availability, an ability to self-heal, no single point of failure, data protection capabilities and proactive serviceability.

**Snapshots.** K2's patented native writeable snapshots are thinly provisioned, resulting in high capacity savings compared to full clones. Snapshots are often used for creating additional data sets for backup, archiving or testing.

**K-RAID Protection.** Highly efficient RAID scheme with 87.5% utilization rate supports a total of three SSD failures per shelf without compromising performance during normal operation and under recovery.

**Management.** Administered via an intuitive web browser-based GUI, K2's built in intelligence automatically performs RAID optimization, performance tuning, monitoring and capacity management. K2 supports fully scriptable CLI, RESTful APIs, VMware vCenter plug-in and Microsoft VSS.



## SCALE-UP AND SCALE-OUT

- Scale-out for linear performance and capacity growth with consistently low latency
- Scale-up enables scaling capacity with better density and lower \$/GB
- All controllers are fully Active/Active

## STORAGE EFFICIENCY

- Data reduction with Selective Global Inline Deduplication, Inline Compression, and Thin Provisioning
- 87.5% RAID utilization
- High density of 30TB/U and low metadata footprint

## ENTERPRISE-GRADE SSDS

- Kaminario-optimized dual parity RAID
- Support for up to three SSD failures per shelf
- 7 year SSD warranty

## STORAGE SIMPLICITY

- Automatic data distribution
- No manual optimizations for performance
- Single management GUI for all array sizes

## SECURITY

- 256-bit AES keys SSD encryption protects all data in array with no impact on performance



## NON-DISRUPTIVE UPGRADES (NDU)

- Upgrades with mix and match of controllers and SSDs
- Non-disruptive hardware and software upgrades or capacity expansions



## HEALTHSHIELD

- Cloud-based call home and analytics
- Preventive, predictive monitoring

## ENTERPRISE RESILIENCY

- High availability with no single point of failure
- Flexible, application-aware Snapshots
- Self-healing

## CONNECTIVITY

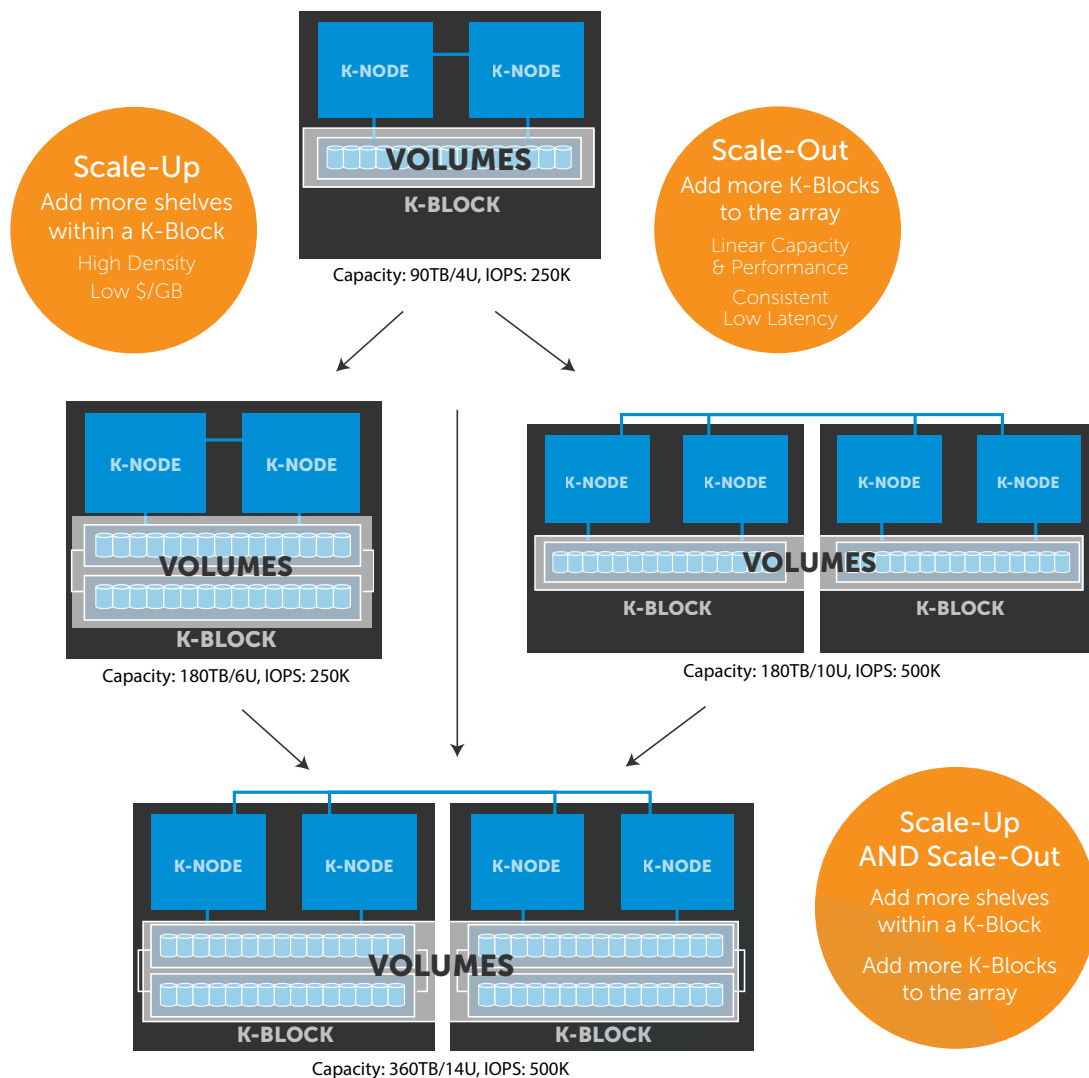
- Supports FC/ iSCSI
- Linear scale of host connectivity

## Key benefits:

- **Reduction in costs by more than 50%.** At an average cost of \$2 per usable G K2 is an ideal primary storage tier for new projects or as a replacement for aging legacy systems. Significant operational savings include lower power, cooling and data center space.
- **Enterprise resiliency.** System downtime is minimized with comprehensive resiliency features including high availability, no single point of failure, complete data protection and proactive serviceability.
- **Business agility.** K2 supports simultaneous workloads such as OLTP, OLAP, and VDI with highly efficient data reduction, global adaptive block size, optimized consistent high performance, scalability and high availability.
- **Simple deployment and management.** Deploying a K2 is quick and simple, and does not require any changes to applications. A browser-based GUI provides an easy management interface. For expansion, K2 supports fully scriptable CLI, RESTful APIs, VMware vCenter plug-in and Microsoft VSS.

## True scale-up and scale-out architecture

K2 is the only storage array on the market today that supports both scale-up and scale-out, enabling organizations to start small and grow seamlessly. This flexibility eliminates the need to compromise on how to non-disruptively expand and grow the array based on the customer requirements.



## System Specifications

The Kaminario K2 All-Flash array has a variety of configurations to suit different customer requirements. All of the configurations can scale in performance and/or capacity according to customer needs. For more information on additional configurations, please contact [sales@kaminario.com](mailto:sales@kaminario.com).

	1 K-Block	2 K-Blocks	4 K-Blocks
Footprint K-Blocks	4U	10U	18U
Footprint +Exp.	6U	14U	26U
Usable Capacity*	7TB-180+TB	14TB-360+TB	28TB-720+TB
Media (encrypted)	Enterprise Class MLC 400GB SSD 800GB SSD		
Density TB/U	Up to 30TB		
IOPS	Up to 250K	Up to 500K	Up to 1M
Bandwidth	Up to 3.2GB/s	Up to 6.4GB/s	Up to 12.8GB/s
Latency	0.35mSec		
Power (Max)	1.1KW-1.4KW	2.5KW-3.1KW	4.8KW-6.1KW
Power (Typical)	0.8KW-1KW	1.7KW-2.2KW	3.3KW-4.3KW
Cooling Max	3.9K-5K BTU/hr	8.6K-10.8K BTU/hr	16.4K-20.8K BTU/hr
Cooling Typical	2.7K-3.5K BTU/hr	6K-7.6K BTU/hr	11.4K-14.6K BTU/hr
Snapshots	Up to 8000 Snapshots		
Management	CLI (SSH), HTTP/HTTPS GUI, Scripting (SSH), RESTful API, VAAI, SNMP, Microsoft VSS, VMware vCenter Plug-in		
Data Reduction/Capacity Utilization Efficiency	Global Selective Inline Deduplication, Inline Compression, Thin provisioning		
Connectivity FC/iSCSI	FC: 4x 8Gbps iSCSI: 4x 10GbE	FC: 8x 8Gbps iSCSI: 8x 10GbE	FC: 16x 8Gbps iSCSI: 16x 10GbE
Management ports	2x 1GbE		

\*Capacity is subject to drive size and the application data reduction ratio. For some datasets such as VDI the range will be higher.



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