



## 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.



# kaminario.

## 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

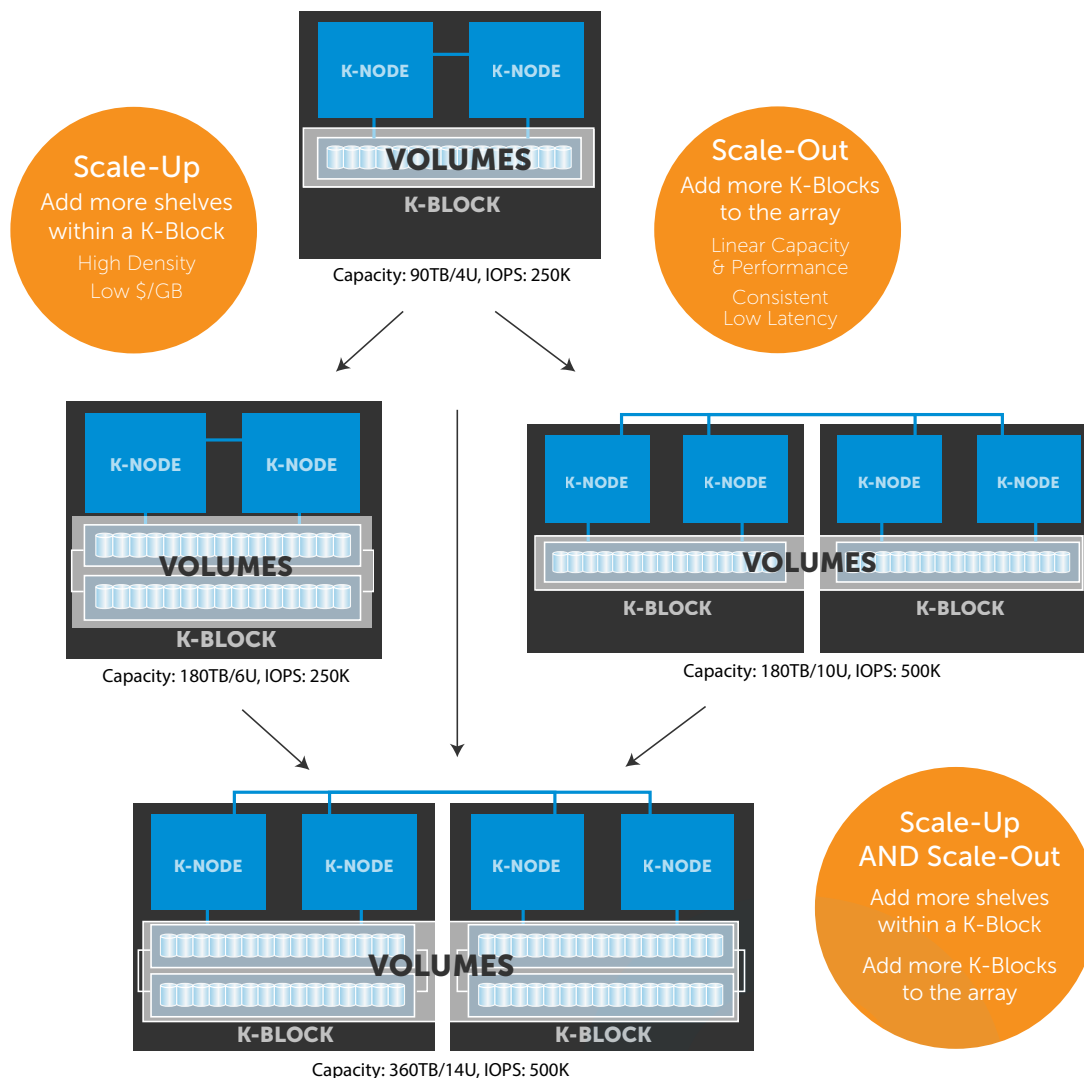
- Supports FC/ iSCSI
- Linear scale of host connectivity

## Key benefits:

- **Reduction in costs by more than 50%.** At an average cost of \$2 per usable GB 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. Qualifications for specific configurations are on the roadmap. For more information, 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)	400GB SSDs 800GB 3D NAND SSDs		
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.



275 Grove Street  
Suite 2-400  
Newton, MA 02466 USA

Tel: 1-877-98-CALL-K2  
(1-877-982-2555)

[info@kaminario.com](mailto:info@kaminario.com)  
[www.kaminario.com](http://www.kaminario.com)