Kaminario K2 All-Flash Array

The Kaminario K2 all-flash storage array delivers predictable performance, cost, scale, resiliency and simplicity so organizations can handle ever-changing and unforeseen business requirements as they arise.

Cost Efficiency

The Kaminario K2 all-flash array elevates cost efficiency for enterprise storage to a new level. With a software architecture designed to take advantage of the most modern flash drives, K2 storage is designed for now and whatever comes next. The K2 protects investments by seamlessly combining existing systems with new capabilities and technologies.

- Data reduction with selective global inline deduplication, always-on inline compression, and thin provisioning
- RAID utilization of 87.5% with optimized dual-parity RAID
- High density of up to 60TB/U, increasing as higher drive capacities become available
- Low metadata footprint

Scale-up, Scale-out

Kaminario's K2 delivers a powerful scale-up and scale-out architecture combined with a mesh active/active design. K2 enables organizations to start small at 7TB to 200TB in just 4U and grow seamlessly up to 1.44PB in 26U. Linear growth maintains consistently low latency while expanding both capacity and performance.

- 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

COST EFFICIENCY
Every element of the K2 design is optimized to balance costs with value and functionality. Customers can start small and grow with all benefits and capabilities included at every step. Added operational savings include reduced energy consumption and larger storage capacity in a smaller data center space.

SCALABILITY
Kaminario's K2 delivers value at every stage of growth. Scale-up to add capacity. Scale-out to add performance. Add the latest drives and processors to an expanded Perpetual Array™ with a Capacity Guarantee.

Adaptive Block Size Optimized for Mixed Workloads

A unique global adaptive block algorithm capability automatically adapts to the best I/O size for any workload. One system simultaneously supports OLTP, OLAP, virtualized server and VDI environments without compromising IOPS or bandwidth.
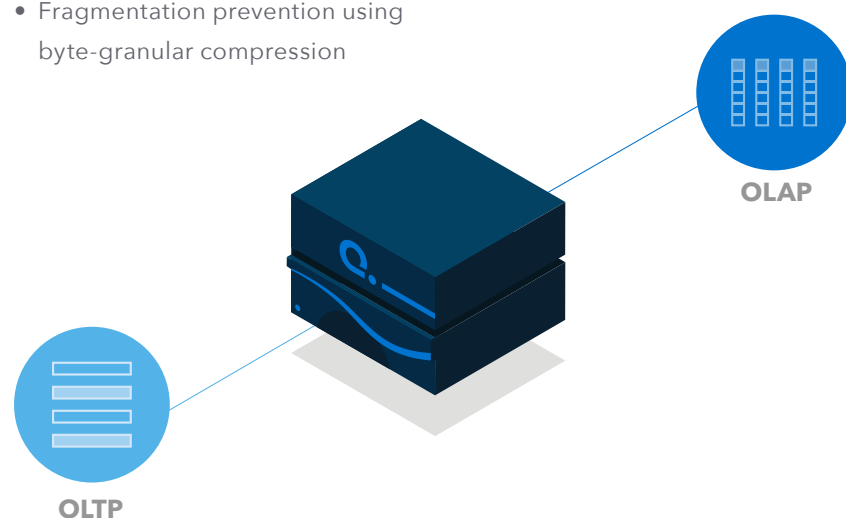
- Adaptive block size executes automatic and simultaneous use of the best I/O size for each workload
- Combine transaction processing and analytics workloads onto a single array

Global Selective Inline Deduplication and Inline Compression

Kaminario deduplication eliminates redundant data, storing it only once. Deduplication is performed globally with processing distributed across all nodes. Uniquely among all-flash arrays, selective 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.

Highly efficient, byte-aligned inline compression reduces the physical data footprint on the flash media with no performance penalty.

- Selective deduplication adjustable by workload impact
- Data reduction through compression even with no deduplication
- Fragmentation prevention using byte-granular compression

OLAP

OLTP

The Perpetual Array

With the K2 Perpetual all-flash storage array, Kaminario makes it possible enhance existing systems seamlessly. As technology advances occur, the system is forward compatible. When faster processors or denser SSDs become available, they can be used to expand the power of an existing array.

- High-performance storage grows with the business and incorporates technology advances without painful data migrations or legacy systems incompatibilities
- The Perpetual Array minimizes capital expense by protecting the investment in existing equipment while reducing future costs as capacity and performance demands increase

Guaranteed Capacity

K2 arrays require no special capacity management or tuning. And, Kaminario Guaranteed Effective Capacity removes uncertainty from capital expenditures and capacity planning.

- Cost efficiency assured by Guaranteed Capacity commitment
- Predictable in-line compression and deduplication backed up with no-cost expansion if storage guarantees are not achieved
- Simple system upgrades and solid investment protection limit cost exposure from capacity expansion

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Enterprise-Class Resiliency

The Kaminario K2 is designed to meet the most stringent requirements of sensitive enterprise applications. Substantial high availability (HA) and disaster recovery (DR) features support K2 resiliency and self-healing with advanced data protection algorithms, no single point of failure, non-disruptive upgrades and proactive serviceability.

- Self-healing HA with no single point of failure
- Self-contained battery backup for persistent data protection during power loss

K-RAID Protection

Highly efficient and robust K-RAID can sustain two concurrent SSD failures without impacting performance, and up to three SSD failures within each SSD shelf without data loss.

- Dual parity protection
- Efficient metadata and real-time health monitoring aid in rapid SSD recovery
- K-RAID is fully automatic and requires no configuration or set-up

Native Replication

Efficient replication ensures K2 enterprise data center resiliency using a snapshot architecture to perform asynchronous application-aware and crash-consistent replication. All essential disaster recovery capabilities support short recovery point objectives (RPO), as little as 60 seconds, and recovery time objectives (RTO) of less than one second. All are native capabilities, with no impact on production performance.

- Native replication requires no costly third-party software
- No performance impact on production
- Short RPO and RTO for disaster recovery
- Application integration ,e.g. Microsoft SQL, utilizing VSS
- Full support for VMware SRM

Kaminario K2 Features

SYSTEM MANAGEMENT	The central principles of K2 management are simple. Administered via an intuitive browser-based GUI, K2's built-in intelligence automatically executes RAID optimization, performance tuning, data distribution, monitoring, and capacity management. K2 supports a fully scriptable CLI, RESTful APIs, VMware vCenter plug-in and Microsoft VSS.
NON-DISRUPTIVE UPGRADE (NDU)	Hardware expansions and software enhancements can be deployed with no interference to production and no dependencies on maintenance windows. Upgrades can incorporate any preferred mix of controllers and SSDs, including newly released processors and drive types.
THIN PROVISIONING	Maximize storage utilization using thin provisioning to assist long-term capacity planning. All base volumes, snapshots and replicas are thin provisioned, reducing required initial capacity and allowing measured, as-needed growth.
SNAPSHOTS	K2's patented native writeable thin-provisioned and space-efficient snapshots deliver concurrent storage efficiency, performance, and scalability. With substantial capacity savings compared to full clones, snapshots are often used to create additional data sets for backup, archiving, development and testing.
SELF-ENCRYPTING DRIVES	Always-on K2 encryption provides protection against data theft, securing data-at-rest with no performance impact. 256-bit AES keys SSD encryption protects all data in the array with no impact on performance.
HEALTHSHIELD™	The Kaminario K2 is designed to meet the most demanding enterprise application requirements. HealthShield's continuous call-home monitoring protection and analysis are the foundations for Kaminario world-class technical support. Proactive monitoring actively discovers and tracks events in real time, with many issues resolved remotely.

System Specifications

	1 K-Block	2 K-Blocks	3 K-Blocks	4 K-Blocks
Footprint K-Blocks	4U	10U	14U	18U
Footprint +Exp.	6U	14U	20U	26U
Usable Capacity*	7TB-360+TB	14TB-720+TB	21TB-1.08+PB	28TB-1.44+PB
Media (encrypted)	480GB 3D MLC SSD / 960GB 3D MLC SSD / 1.92TB 3D MLC SSD			
Density TB/U	Up to 60TB			
IOPS	Up to 250K	Up to 500K	Up to 750K	Up to 1M
Bandwidth	Up to 3.2GB/s	Up to 6.4GB/s	Up to 9.6GB/s	Up to 12.8GB/s
Latency	0.35mSec			
Power (Max)	1.1KW-1.4KW	2.5KW-3.1KW	3.7KW-4.5KW	4.8KW-6.1KW
Power (Typical)	0.8KW-1KW	1.7KW-2.2KW	2.5KW-3.2KW	3.3KW-4.3KW
Cooling Max	3.9K-5K BTU/hr	8.6K-10.8K BTU/hr	12.4K-15.8K BTU/hr	16.4K-20.8K BTU/hr
Cooling Typical	2.7K-3.5K BTU/hr	6K-7.6K BTU/hr	8.7K-11.1K 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, VMware SRM			
Data Reduction	Global Selective Inline Deduplication, Inline Compression, Thin Provisioning			
Connectivity FC/iSCSI	FC: 4x 8Gbps iSCSI: 4x 10GbE	FC: 8x 8Gbps iSCSI: 8x 10GbE	FC: 12x 8Gbps iSCSI: 12x 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.

Contact
Contact a business development representative to answer any questions you may have.

Schedule a Demo
Schedule a demo with an engineer and learn if Kaminario's solution works for you.

Request a Quote
Request a quote for your application from our business development team.

About Kaminario

Kaminario, the leading all-flash storage company, is redefining the future of modern data centers. Its unique solution enables organizations to succeed in today's on-demand world and prepares them to seamlessly handle tomorrow's innovations. Only Kaminario K2 delivers the agility, scalability, performance and economics a data center requires to deal with today's cloud-first, dynamic world and provide real-time data access -- anywhere, anytime. Hundreds of customers rely on the Kaminario K2 all-flash array to power their mission critical applications and safeguard their digital ecosystem. Headquartered in Needham, MA, Kaminario works with an extensive network of resellers and distributors, globally.

For more information, visit www.kaminario.com

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