

Four Steps to Unleashing The Full Potential of Your Database

This insightful technical guide offers recommendations on selecting a platform that helps unleash the performance of your database.

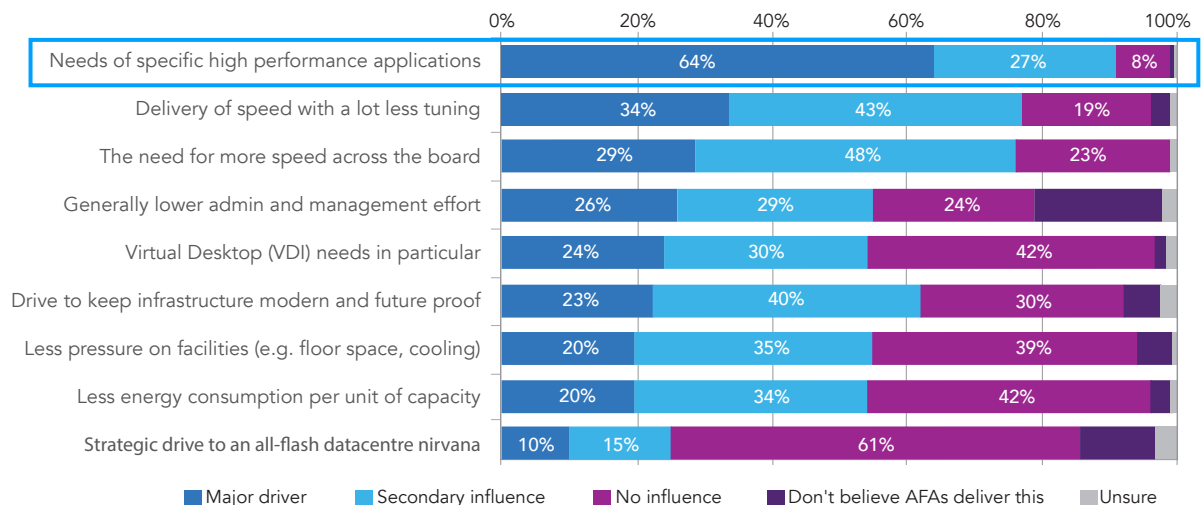


What's the #1 Driver for Organizations Moving to All-Flash Storage?

It's all about the Applications!

First, Let's Address the Problem

It's hard to overstate the importance of application performance as the key driver for Organizations moving to the All-flash datacenter. Modern, cloud-era applications are built first and foremost with user experiences in mind. Imagine waiting more than 10 seconds on your mobile shared ride app to respond – a single bad experience may force you into the myriad of alternative solutions, in this case, a quick swipe up to close one application and open the next. Never before has the user experience been as important as in today's mobile, cloud-driven and digital world.



Data from FreeForm Dynamics Research - 2016

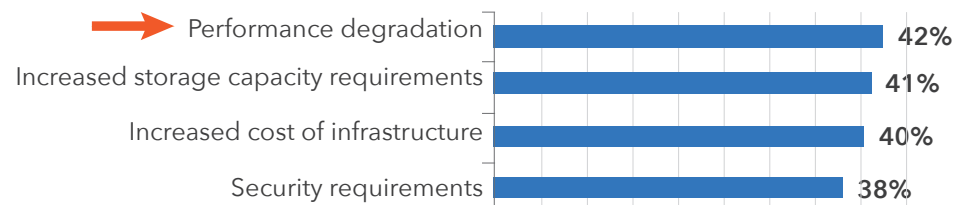
Within applications, (almost) everything has to do with databases

BIGGEST CHALLENGES FACED BY DBAs:

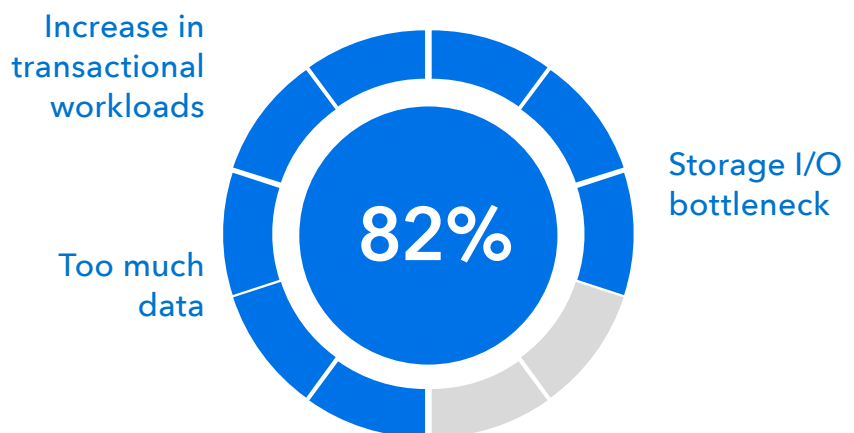
- Increase in transactional workloads
- Too much data
- Storage I/O bottleneck

Once you peel the top layer of applications, it's obvious that application performance is largely driven by the underlying database. In an recent IDC study, the biggest challenge identified by Database Admins (DBAs) was performance degradation. And in a follow up question, DBAs identified these three top reasons for the performance degradation.

What are the biggest database challenges for Organizations?



What are the biggest causes for performance degradation?





How to identify whether your storage is causing an I/O bottleneck?

These are the most common symptoms of storage I/O bottleneck for Oracle and SQL Server. See these lately? Chances are that your storage infrastructure may be the culprit!

82%



Writes affecting read performance



High Storage wait events Latencies



Log and Tempdb / Redo Log and Temporary objects Contention



Low throughput

Break the Storage I/O bottleneck with Kaminario K2 All-Flash

Not all storage AFAs are created equal!

In the next few sections, we'll cover the four keys to ensure that your data infrastructure is helping, not hurting, your database-driven application performance.

BREAK I/O BOTTLENECK
2X - 5X

Better Oracle and SQL Server performance on K2 All-flash*



* Based on actual implementation data

1 MIXED WORKLOAD PROCESSING

Select Storage Built from the Ground-up to Provide Extreme Performance for Mixed Workloads

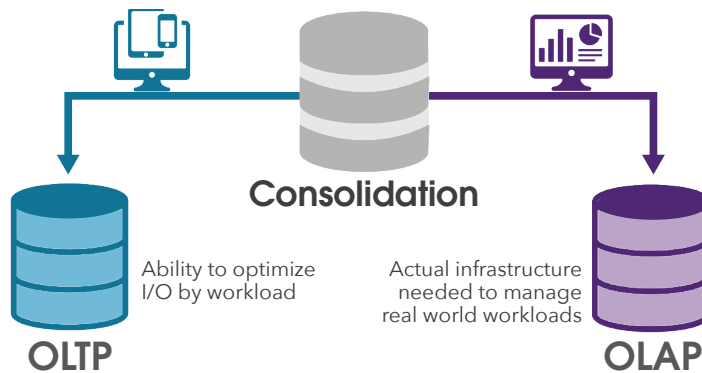


Excels at mixed workload processing

- Look for consistent low latency and high throughput/IOPS for mixed workloads
- Storage that keeps OLTP and OLAP workloads highly responsive even under peak demands application performance

What is mixed workload processing and why it matters?

Much like a large highway supporting traffic from vehicles of all kinds and sizes, storage arrays have to manage traffic from applications that come in many differing block sizes. Don't let traditional storage be the point of congestion because of its rigid block size limitation. Robust mixed workload matters. Examples include running multiple database flavors on a single array (SQL Server, Oracle, DB2, MongoDB, etc.) in conjunction with OLAP and consolidating many instances on a single platform to save on cost.



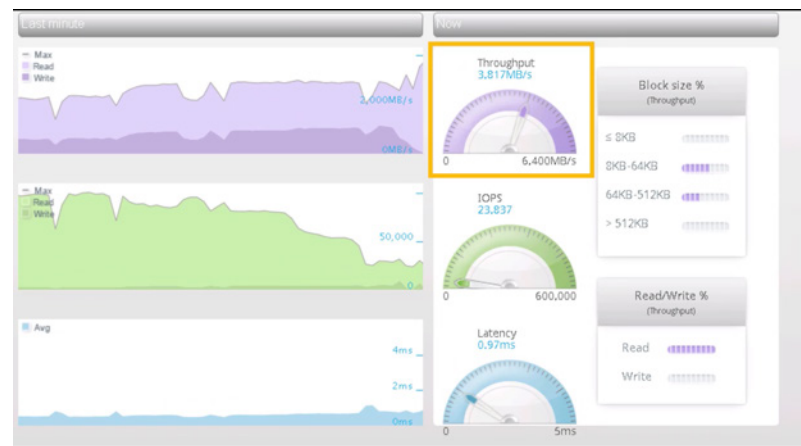
Mixed workload by consolidating many instances on the same array

The Proof is Always in the Pudding!

Accelerating Oracle Full Table Scans and Index Creation are just two examples of the massive acceleration the right architecture can provide your database environment.

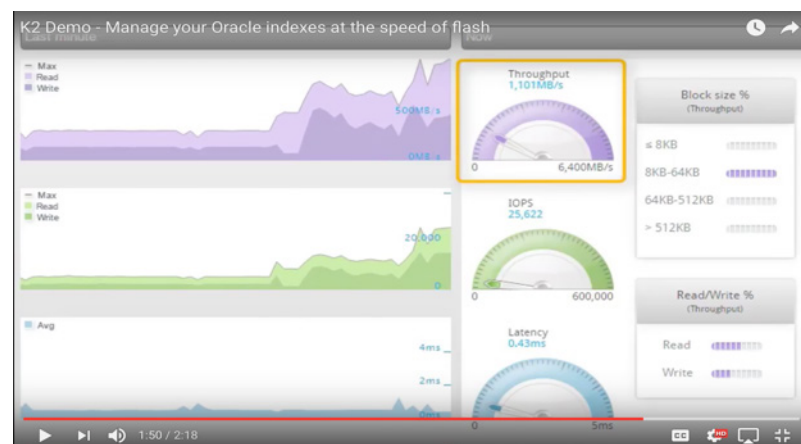
Full Table Scan processing **15 million rows/sec** & almost **4,000 MB/s** of throughput

Oracle Full Table Scan on Kaminario K2



Index Creation on a **239 million record** table in **35 seconds** at less than **0.5ms** latency

Oracle Index Creation on Kaminario K2



2 ACTIVE-ACTIVE ARCHITECTURE

Select Composable Storage with an Active-Active Architecture to Maximize Performance Density

Cloud-Ready Composable Architecture

Kaminario's cloud-ready and active-active shared composable architecture brings a host of benefits to database performance, such as:



4-6X
Faster

table & partition scans, resulting in shorter batch job completion compared to traditional storage



6-8X
Faster

index seek times resulting in considerably more transaction per second



2-4X
Increase

the speed of your RMAN backup and restores



75%
Reduction

in overall operational TCO

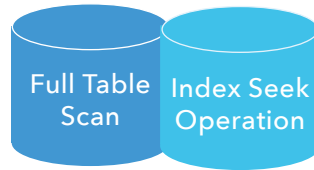


Provides truly active-active controllers

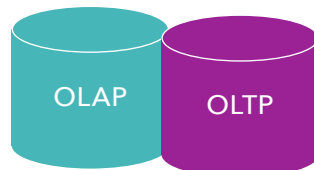
- Active-Active controllers ensure all CPUs serve database read/write needs through advanced shared metadata algorithms
- Allows you to start small, grow by adding additional active-active controllers

4 Questions to Ask Your Storage Provider

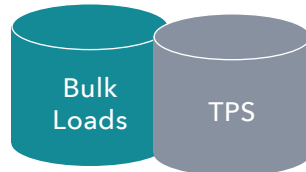
Will your storage solution allow my databases to do this? (and, can you prove it?)



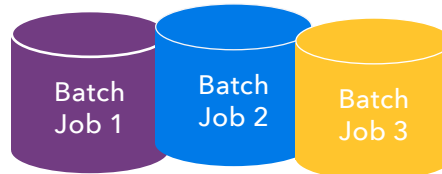
1 Run a full table scan without affecting index seek performance?



2 Concurrently run OLTP & OLAP on the same instance without any impact on performance?



3 Ensure that bulk load does not affect online queries?



4 Run multiple batch jobs during the day?

3 SELECTIVE DEDUPLICATION

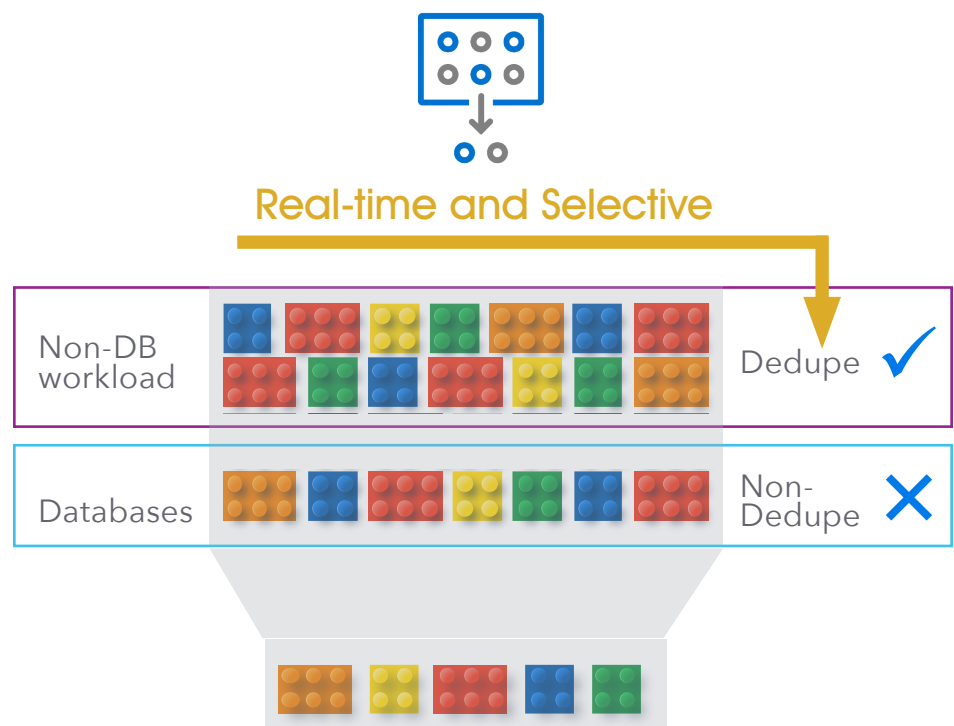
Select Flexible Storage that Provides Deduplication that can be Selective at the Volume Level for Extreme Efficiency

Selective Deduplication Helps Speed Up Database Performance

- Deduplication on databases is limited or non-existent
- Flexibility of turning off deduplication for Databases - no wasted CPU cycles
- **15-20%** Performance benefit on K2 for turning off deduplication

Kaminario K2 all-flash arrays allow you to choose what block of data you want to deduplicate, making them more efficient, more reliable and providing the best possible performance profile. Rather than creating siloes of data, Kaminario K2 can pull data at a global level, offering true in-line deduplication and only on the data that it will work on.

Selective Deduplication



clearwater

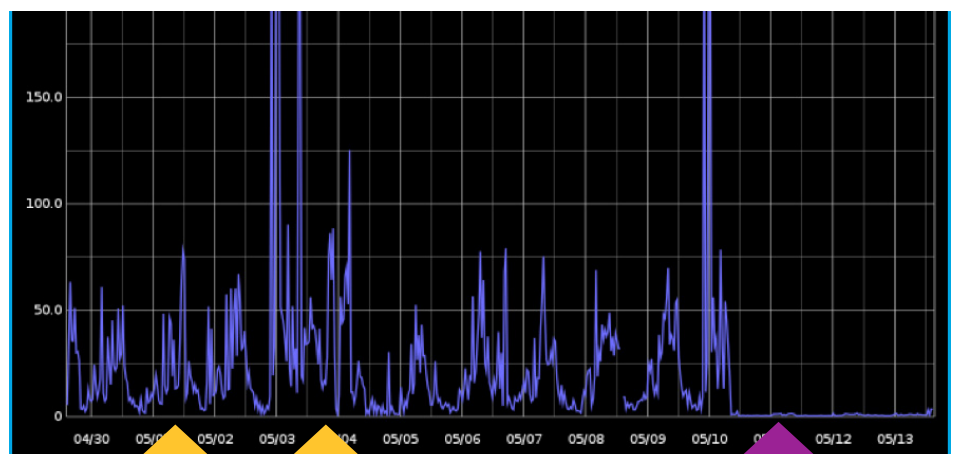
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“Our deciding factors in the choice of Kaminario were the combined cost/GB and system performance. We felt that many of the pure flash arrays were either too costly or not production worthy. Kaminario impressed us as being both enterprise ready and cost effective.”

James Price,
Director of Product Development, Clearwater Analytics

Latency Improvement at Clearwater Analytics

Clearwater Analytics
reduces reporting
time by **65%**
with Kaminario K2

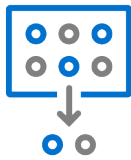


Before K2 implementation,
the storage I/O latency was
inconsistent

After K2 implementation,
the I/O latency is
consistently low

4 MAXIMUM COST-EFFICIENCY

Select Storage Focused on Providing the Highest Cost-Efficiency with Custom-built Data Services for Database Workloads



Selective, inline and advanced data reduction

- Pay close attention to data reduction technologies that go above and beyond basic features
- Look for optimized compression services such as offloaded hardware-compression that can offer 25% more effective data reduction and help reduce footprint



High RAID & disk utilization

- Specialized K-RAID scheme offering Industry's highest utilization rate @ 87.5%



Advanced & easy snapshots

- Snapshots enable up to 90% capacity savings compared to full clones

Supercharge Applications and Databases with K2 All-Flash



Mixed workload processing



2X-5X better database performance



Best-in-class data reduction



Efficient and easy snapshots



99.999% Availability



Flexible scale-up and scale-out





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