THE ONLY IN-MEMORY DATABASE OPTIMIZED FOR FLASH

Aerospike is the user store and system of engagement for Internet-scale, interaction platforms like AppNexus, BlueKai, eXelate, The Trade Desk and [x +1], predictably processing 30+ terabytes of data and over 35 billion transactions per day. Unlike other databases that use the Linux file system built for rotational drives, Aerospike has implemented its own proprietary log structure file system to access flash – raw blocks on SSDs – directly. Access is optimized for how flash works – with small block reads and large block writes – and parallelized across multiple SSDs for optimal throughput.

## 10x better performance than other NoSQL Databases

In an independent benchmark test of NoSQL databases conducted by Thumbtack Technology, Aerospike wiped out the competition, delivering nearly 10 times the throughput. Aerospike's flash drive/SSD optimization delivered an unprecedented speed advantage over other databases.

Benchmark Results Summary

➤ Aerospike was the dominant performer showing durable, replicated behavior 5-10 times faster. Even when others were set to asynchronous replication, Aerospike retained this huge advantage.

➤ Aerospike achieved nearly 200,000 transactions per second (TPS) in balanced read-write tests and over 300,000 TPS in read-heavy tests (the equivalent of less than 1 millisecond per transaction, on average.)

➤ Across all four Thumbtack tests for latency, Aerospike maintained sub-millisecond latency even while processing 180,000 to 400,000 operations per second.

Download the full report : www.aerospike.com/benchmark

Maximum Throughput - SSD- backed Data Set
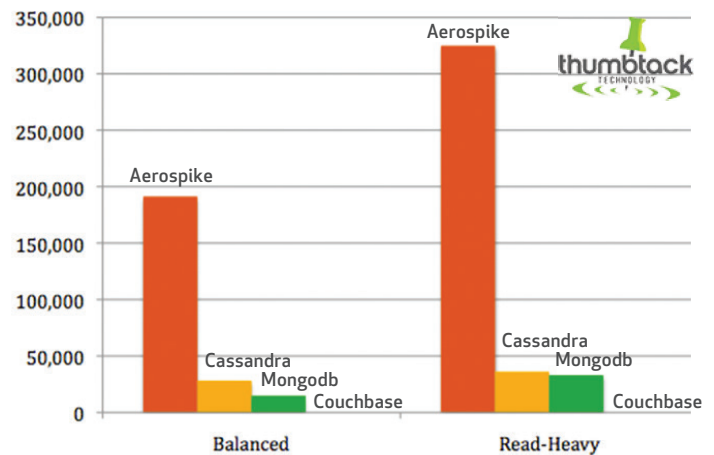
Both Couchbase Server versions 1.8 and 2.0, failed the test.

15x fewer servers than other In-Memory Databases

Wikibon CTO David Floyer, compared two different implementations – data in memory versus data in flash using Aerospike. The comparison calculated the number of servers required to deploy a 2 TB replicated database supporting 800,000 operations / second with 5,000 bytes / operation over 2 years. Fewer servers make for a system that is far simpler to operate as well as cheaper to purchase and maintain.

The chart on the right details server reductions experienced by an Aerospike customer - one of the world's largest video advertising platforms. A traditional DRAM only system would have required 186 servers. With Aerospike, they were able to manage 10TB of data (replicated 2x), replicate the cluster in a second data center and run an additional test cluster with just 14 servers instead of 186.

Learn More: http://wikibon.org/wiki/v/Data_in_DRAM_is_a_Flash_in_the_Pan

Large Video Ad Platform	DRAM+SSD (Aerospike)	DRAM only (other NoSQL)
Storage per server	2.4TB (4x700GB)	180GB (196GB server)
TPS per server	500k	500k
Cost per server	$23,000	$30,000
#Servers for 10TB (2x replication)	▪▪▪▪ 4	53
Second data center	▪▪▪▪ 4	53
Spares / test	▪ 6	▪ 80
Total Server Count	14	186
Server Costs	$322,000	$5,580,000

AEROSPIKE 2 & 3

Aerospike 3 builds on Aerospike 2, the flash-optimized NoSQL database used by businesses to predictably process terabytes of data and billions of transactions per day in real-time.

Furthering the legacy of speed, scale, and reliability, Aerospike 3 adds an extensible data model that supports complex data types, large data types, queries using secondary indexes, user defined functions (UDFs) and distributed aggregations. This enables developers to process more data faster to create the richest, most relevant real-time interactions.

Extensibility with Aerospike 3

UDFs are written in Lua, a lightweight scripting language with extensible semantics and multi-core support. Key Aerospike 3 capabilities that can be combined for more powerful processing include:

➤ **Complex data types:** maps and lists, in addition to the integer, string and blob types supported earlier
➤ **Distributed query processing with secondary indexes**
➤ **User-defined functions (UDFs)**: which enable applications to process complex data in the database server itself instead of moving data back and forth across the network. Applications can invoke a UDF one record at a time or use a scan and apply a UDF to each record.
➤ **Large Data Types:** time-ordered stack, ordered list, unique set or map—composite objects made up of millions of elements that can be accessed via UDFs, with predictable high performance, regardless of size.
➤ **Distributed aggregations:** combine queries, large data types, complex data types and UDF capabilities to enable real-time in-database analytics. A query request is executed in parallel on each node in the cluster; query results are streamed into a pipeline of UDFs that filter, transform and aggregate data on that node; and data from all nodes in the cluster is aggregated again on the client.

Built on Predictable High-Performance of Aerospike 2

Real-time performance, linear scalability, and extreme reliability are the hallmarks of the Aerospike flash-optimized in-memory database and key-value store since it first launched three years ago. These capabilities include:

➤ **Predictable, ultra-fast performance:** sub-millisecond (ms) latency and reads/writes completed in less than 1 ms 99.5% of the time
➤ **Linear scaling:** manage billions of objects and terabytes of data at 1 million-plus transactions per second (TPS) on commodity servers
➤ **ACID (atomicity, consistency, isolation, durability):** compliance protects against data loss, and simplifies development.
➤ **Uncompromising reliability:** no single points of failure, hotspots, data loss, performance degradation, maintenance windows, or downtime.
➤ **Self-managing clusters**: cuts operational costs by up to 50% in production deployments
➤ **Flash-optimized architecture**: requires 10x fewer servers compared to other NoSQL databases or traditional in-memory databases.

Try it: www.aerospike.com/free-aerospike-3-community-edition/