Aerospike

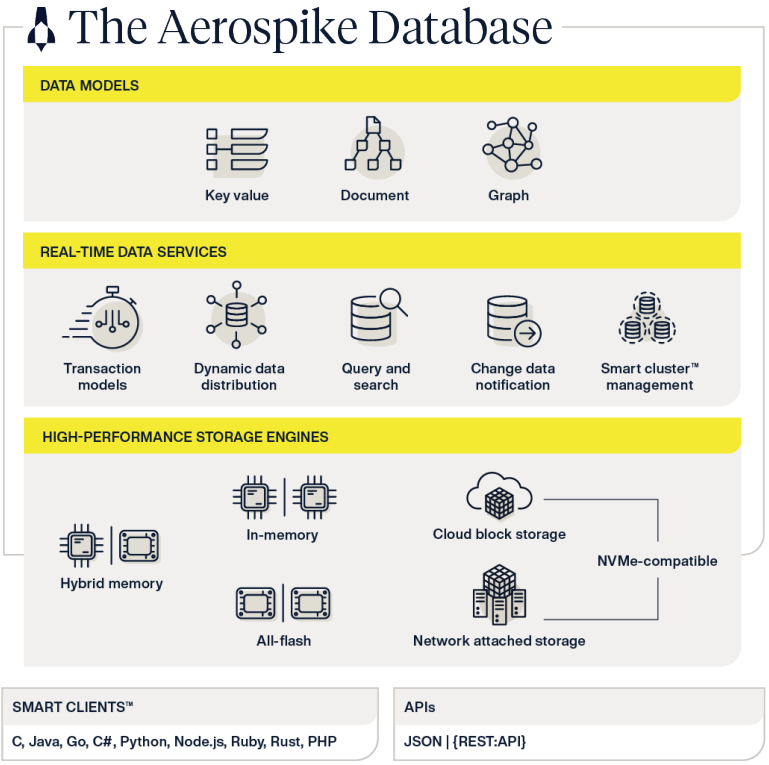
PRODUCT BRIEF

Aerospike Database 8

Multi-model real-time NoSQL database powered by a unified storage engine format

Aerospike Database 8 is a multi-model, highly-distributed real- time NoSQL database that powers some of the most demanding real-time workloads in the world, including fraud prevention, recommendations, risk assessment, instant payments, AdTech, gaming, and IoT. Developers, architects, and DevOps professionals have enjoyed the Aerospike Database's predictable sub-millisecond performance, gigabyte-to-petabytes scalability, five-nines uptime, and enterprise-grade security for over a decade.

Aerospike 8 introduces strongly consistent distributed ACID transactions that enable mission-critical data-intensive applications without sacrificing the scale, performance, throughput and resiliency for which Aerospike is known.



Built for the infinitely possible

Architects, developers, and devops can surprise themselves with what they can do with data with the Aerospike Database 8 capabilities:

Lowest latency and highest throughput

Consistently use vast amounts of data to achieve better, just-in-time decision-making.

Maximize operational efficiency

Reduce infrastructure and R&D spend.

Predictable performance and high availability

Reduce the risk of operating mission-critical data-intensive applications.

Operating models

Key-value database

Aerospike 8 excels at high-speed key-value workloads such as user profile stores and metadata stores that demand ultra-low latency and always-on availability.

Document database

Via Collection Data Types (CDTs), Aerospike supports document-style modeling for real-time querying and processing of JSON data. This is ideal for Java developers using the Spring Framework.

System of record

Aerospike can operate as a real-time system of record with strong consistency and high throughput, supporting mission-critical applications and downstream systems such as AI pipelines.

In-memory database

Aerospike's in-memory engine offers fast restarts, compression, and efficient defrag, often outperforming specialized in-memory systems on cost and speed.

In-memory cache

As a high-performance cache, Aerospike provides precision LRU eviction and a wide array of persistence options for durability.

Graph database

Aerospike supports graph queries via the Gremlin language and a separately available graph module, with independently scalable compute and storage nodes.

Core features and capabilities

Multi-model engine

Aerospike 8 supports a variety of data models to deliver high-throughput, low-latency operations for JSON document data, graph data, and key-value data.

Strongly consistent transactions

Aerospike 8 provides strong consistency on primary key access, confirmed through Jepsen test results. Strict serializability of transactions and linearizable reads guarantee that data stored in Aerospike is always correct in all scenarios.

Unified storage engine format

Aerospike 8 features high-performance storage engines for in-memory, All-Flash, and our patented Hybrid Memory Architecture (HMA). All storage models use the same unified storage engine format for improved performance and a better developer experience.

Scalability

The Aerospike Hybrid Memory Architecture with All-Flash and Hybrid Memory options, coupled with dynamic cluster management, allows the Aerospike database to scale from gigabytes to petabytes and store transactional, operational, and streaming real-time data as well as historical data.

Compression

Aerospike's storage compression feature provides lossless compression of records written to persistent storage. Additionally, the communication between the Clients and the database is also compressed.

Rich data types

- Scalar data types: Integer, Double, String, BLOB, Bytes
- Collection data types: List (Ordered and nonordered), Map (Key-Ordered, Key-Value-Ordered, Unordered)
- Probabilistic data types: HyperLogLog, HyperMinHash
- Geospatial: GeoJSON data type

Change data capture

The Aerospike change notification framework enables Aerospike servers to stream changes to other systems via Aerospike Connect components. Allows for building easy yet reliable and scalable systems for complex event processing (CEP).

Secondary indexes

Secondary indexes power complex querying, and can be stored on SSD. They are available at the partition level for massive parallelism and improved performance and scalability.

Aerospike Expressions

Aerospike Expressions execute operations and functions closer to the data for more efficient comparisons of values, even extending the ability to read, write, and execute complex computations as arguments in other operations.

Set indexes

Set indexes provide efficient access to a Set (akin to an RDBMS table) within an Aerospike Namespace (akin to an RDBMS database). This feature allows fast queries of records within a Set in a petabyte-scale database.

Strong consistency

Aerospike provides strong consistency on primary key access, which has been confirmed through Jepsen test results. Data held in Aerospike is always guaranteed to be correct in all scenarios. Aerospike Multi-site Clustering brings strong consistency to deployments across multiple sites.

Rack awareness

The Aerospike rack aware feature can support high availability across different geographies. It allows cluster nodes to be partitioned into disjointed groups, which can then be assigned such that nodes holding masters are in a different datacenter than those holding replicas.

Enterprise security

Aerospike offers enterprise-class features to provide security and operational controls to comply with your audit needs with full transport encryption, in-database transparent data encryption, LDAP and ACL's-based authentication, role-based access control (RBAC) and whitelisting authorization, auditing, and centralized secret management via HashiCorp Vault, and more.

High availability and replication

- **Uptime and high availability:** Aerospike provides high availability and a demonstrated uptime of five 9s (99.999%) or more which is made possible by our unique dynamic cluster management and intelligent client technology.
- **Synchronous data replication:** Aerospike Multi-Site Clustering supports always-on, strongly consistent, globally distributed transactions at any scale. It provides a true real-time active-active solution with great resiliency on WANs.
- **Asynchronous data replication:** Aerospike Cross Datacenter Replication (XDR) delivers fast, flexible, and resilient asynchronous replication of data across geographically distributed clusters. It can be configured in active-passive, star, mesh, and hybrid topologies.

Ecosystem

Integration with existing data stores and systems for building modern data pipelines and powering highly scalable, low-latency applications for AI/ML, Query, Search, and Streaming (see table below for details on Aerospike Connect.)

Deployment options

- In data centers and private clouds
- In the public cloud: Google Compute Platform, Amazon Web Services, Microsoft Azure, Alibaba Cloud and others.
- Aerospike Cloud Managed Service: Aerospike experts deliver and maintain an optimized deployment of the Aerospike database in cloud environments with white glove service.

Database product features

Performance	Community edition	Standard edition	Enterprise edition	Aerospike Cloud Managed Service
Transaction or queries per second, max	Unlimited	Unlimited	Unlimited	Unlimited
Namespaces, max[2]	2	32	32	32
Objects per namespace per node, max[2]	4 billion	0.5 trillion	0.5 trillion	0.5 trillion
Cluster size	8 nodes	256 nodes	256 nodes	256 nodes
Number of clusters, max	Unlimited	Unlimited	Unlimited	Unlimited
Data size	5 TB	Unlimited	Unlimited	Unlimited

Architecture	Community edition	Standard edition	Enterprise edition	Aerospike Cloud Managed Service
Multi-site Clustering[1]			✓	
Strong consistency[1]			✓	✓
Rack awareness[1]			✓	✓

[1] Available with additional licensing. [2] See known limitations for more details.

Storage engine	Community edition	Standard edition	Enterprise edition	Aerospike Cloud Managed Service
In-memory	✓	✓	✓	✓
Hybrid Memory Architecture	✓	✓	✓	✓
All-flash			✓	
NVMe-compatible block storage	✓	✓	✓	✓

Security	Community edition	Standard edition	Enterprise edition	Aerospike Cloud Managed Service
TLS transport encryption		✓	✓	✓
ACLs		✓	✓	✓
Vault			✓	✓
LDAP[1]			✓	✓
Encryption at rest[1]			✓	✓
IPS 140-2 compliance			✓	✓

[1] Available with additional licensing. [2] See known limitations for more details.

Operations	Community edition	Standard edition	Enterprise edition	Aerospike Cloud Managed Service
Backup and restore	✓	✓	✓	✓
Cross Datacenter Replication (XDR)			✓	✓
Rate quotas		✓	✓	✓
Change notification			✓	✓
Rapid rebalance		✓	✓	✓
Uniform balance		✓	✓	✓
Delay fill migrations		✓	✓	✓
Quiescence		✓	✓	✓
Compression[1]			✓	✓
Fast restart		✓	✓	✓
Durable delete		✓	✓	✓
LRU cache eviction	✓	✓	✓	✓
Read page cache	✓	✓	✓	✓
IPv6		✓	✓	
Cloud console				✓
24x7 monitoring and alerting				✓

[1] Available with additional licensing. [2] See known limitations for more details.

Aerospike Connect	Community edition	Standard edition	Enterprise edition	Aerospike Cloud Managed Service
Aerospike Connect for ElasticSearch[1]			✓	Contact us
Aerospike Connect for Spark[1]			✓	Contact us
Aerospike Connect for Kafka[1]			✓	Contact us
Aerospike Connect for JMS[1]			✓	Contact us
Aerospike Connect for Pulsar[1]			✓	Contact us
Aerospike Connect for Trino[1]			✓	Contact us
Aerospike Connect for Event Stream Processing[1]			✓	Contact us

Query	Community edition	Standard edition	Enterprise edition	Aerospike Cloud Managed Service
Expressions	✓	✓	✓	✓
Set indexes	✓	✓	✓	✓
Secondary indexes	✓	✓	✓	✓

[1] Available with additional licensing. [2] See known limitations for more details.

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Support	Community edition	Standard edition	Enterprise edition	Aerospike Cloud Managed Service
Binaries	Available	Tested and verified	Tested and verified	Tested and verified
Enterprise production support		✓	✓	✓
Hot patch availability	✓	✓	✓	✓
Community support	✓	✓	✓	✓

Subscriptions	Community edition	Standard edition	Enterprise edition	Aerospike Cloud Managed Service
Production	Free	Licensed by volume of unique data managed and active production clusters	Licensed by volume of unique data managed and active production clusters	Annual subscription based on non-replicated data stored in the cluster
Set indexes	Free	Free with commercial license	Free with commercial license	Annual subscription based on non-replicated data stored in the cluster

License and pricing	Community edition	Standard edition	Enterprise edition	Aerospike Cloud Managed Service
Aerospike server license type	AGPLv3	Commercial license	Commercial license	Commercial subscription
Aerospike client license type	Apache v2	Apache v2	Apache v2	Apache v2
Pricing	Free	Contact us	Contact us	Contact us

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Aerospike is the real-time database built for infinite scale, speed, and savings. Our customers are ready for what's next with the lowest latency and the highest throughput data platform. Cloud and AI-forward, we empower leading organizations like Adobe, Airtel, Criteo, DBS Bank, Experian, PayPal, Snap, and Sony Interactive Entertainment. Headquartered in Mountain View, California, our offices include London, Bangalore, and Tel Aviv.

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