

# POWERING REAL-TIME ENTERPRISE DATA SOLUTIONS

## Highlights

### Powers Real-time Enterprise Use Cases

Aerospike's performance at scale, combined with its critical enterprise database features and integrations allows it to be utilized as System of Engagement (SOE), System of Record (SOR) and Query and Reporting Database in real-time

### Unmatched Uptime and Reliability

Aerospike uniquely combines proven five-9's+ of uptime, predictable high performance, autonomic cluster management, with strong consistency and durability.

### Performance at Any Scale

Aerospike's dynamic cluster management and unique flexible storage engine enable our database to reliably handle millions of transactions per second while efficiently scaling to meet petabyte-range data volume needs.

### Reduces Complexity

Aerospike solves server sprawl with our efficient Hybrid Memory Architecture and the option to utilize Intel Optane DC Persistent Memory and is easily deployable on bare-metal, on-premises, in the cloud or any combination thereof.

### Exceptionally Low TCO

Fueled by our patented Hybrid Memory Architecture™, Aerospike provides unmatched performance at 20% the total cost of ownership (TCO) of legacy NoSQL databases.

## Overview

Changing customer expectations and industry disruptors are driving significant investments in digital transformation initiatives across multiple industries. To compete in today's real-time digital economy, companies must invest in the right hyperscale data architecture to enable the right decisions in the moments that matter. This is only possible by utilizing modern data architectures which support extreme performance at scale. These modern data architectures consist of the following components: System of Engagement (SOE) databases that capture real-time data from edge and near-edge devices; System of Record (SOR) databases which store both the real-time data from the SOE database and historical data and act as a single source of truth; Transactional Databases which can process billions of records daily with no data loss and Query and Reporting Databases to leverage the combined data. High-speed data transfer between these components is required as it enables real-time decisioning.

## Aerospike Real-Time NoSQL Data Platform

Aerospike provides unmatched performance at any scale for all components of the end-to-end platform (Figure 1). The platform consists of the:

- 1 Edge Database (SOE)** - Used for real-time decisioning based on local streaming and transactional data plus historical data pulled dynamically from the SOR.
- 2 Real-time Core Database (SOR)** - Stores transactional and historical data and pushes data as needed to the SOEs also powering ML and AI-based applications.
- 3 Transactional System** – Local or distributed database which can process Billions of transactions a day with no data loss
- 4 Query and Reporting Database** – Stores historical data primarily for reporting and visualization purposes, integrated via Aerospike Connect for Spark.
- 5 Aerospike Cross Datacenter Replication (XDR)** - Enables companies to directly integrate the Aerospike Database with their existing Spark infrastructure
- 6 Aerospike Connect for Spark** - Enables companies to directly integrate the Aerospike Database with their existing Spark infrastructure.
- 7 Aerospike Connect for Kafka** - Makes it easy for enterprises to exchange data bi-directionally between the Aerospike Database and enterprise transactional systems and **Legacy Data Stores**.
- 8 Aerospike Clients** - high performing clients offered and supported by Aerospike

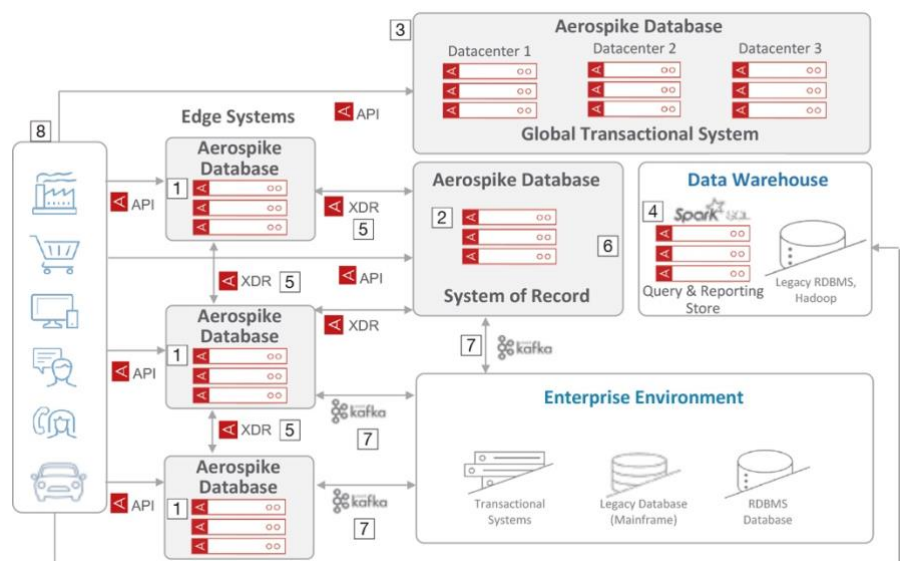


Figure 1.  
 Aerospike  
 Next Generation, Real-time  
 NoSQL Data Platform

## Meeting Hyperscale Enterprise Data Management Requirements

The Aerospike database delivers millisecond response times at scales of terabytes to petabytes for the strictest enterprise requirements:

### Durability/Consistency

**Durability** - Data can be replicated asynchronously across geographies and synchronously written to other nodes in the cluster and to flash storage without disruption for the highest durability.

**Consistency** - Aerospike provides strong consistency on primary key access that has been confirmed through Jepsen test results. Data held in Aerospike is always guaranteed to be correct in all scenarios.

### Extreme Performance

**High Throughput and Low Latency** - Multi-threaded parallel processing at the CPU combined with our patented Hybrid Memory Architecture (Figure 2) designed for flash storage devices uniquely deliver predictable high performance at scale.

**Smart Client Architecture** - Aerospike's smart client architecture ensures parallel access to multiple servers in a cluster for the highest possible performance.

**Real-Time Data Transfer Between Edge and Core** - Aerospike XDR enables multiple geographically dispersed data centers to stay in sync through high performance replication.

**Support for Next-generation Memory** - Aerospike is the first open database supporting the Intel® Optane™ DC persistent memory combining DRAM-like performance with flash-like persistence. Both data and the indexes can reside in PMEM for extreme performance.

### High Availability

**Uptime and High Availability** - Aerospike provides high availability and a demonstrated uptime of five 9s or more which is made possible by our unique cluster management and intelligent client technology in addition to local/remote replication.

### Scalability

**Scalability** - The Aerospike Hybrid Memory Architecture with All Flash and Hybrid Flash options, coupled with Dynamic Cluster Management, allows the Aerospike database to scale to petabytes and store transactional/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.

### Enterprise Security

**Encryption** - Aerospike supports full transport encryption, as well as in-database transparent data encryption.

**Authentication** - LDAP and Kerberos authentication mechanisms are supported. Rich sets of access control options are available including ACLs.

**Authorization** - Aerospike provides a sophisticated role-based access control (RBAC) system.

**Auditing** - Aerospike can be configured to generate audit log messages on a wide variety of security events.

### Developer Features

**Aerospike Clients** - a large number of high performing clients are offered and supported by Aerospike, including the REST Client which is a standard interface for the Aerospike database.

**Complex Modeling** - Basic Data Types supported: integers, strings (UTF-8), doubles, floating point, bytes, binary BLOBs, GeoJSON. Complex Data Types (CDTs) supported: sorted lists, lists, and maps, time series, graphs, geospatial and other complex data structures.

**Change Notification Framework** - It allows Aerospike servers to efficiently notify external agents of the changes and provides an easy to build yet reliable and scalable system for complex event processing (CEP).

### Integrations

**Integration with Existing Data Stores and Systems** - Aerospike Connect for Spark and Kafka allow SQL databases, NoSQL databases, and ML-based tools to integrate seamlessly and efficiently to other enterprise data stores and systems.

### Deployment Options

**In Data Centers and Private Clouds**

**In Public Cloud** - Google Compute Platform, Amazon Web Services, Microsoft Azure, Alibaba Cloud and others

**Via Orchestration Platforms** - Kubernetes, Docker and Pivotal

**As Managed Cloud Service** - deployment and management of cloud-based Aerospike databases by Aerospike personnel

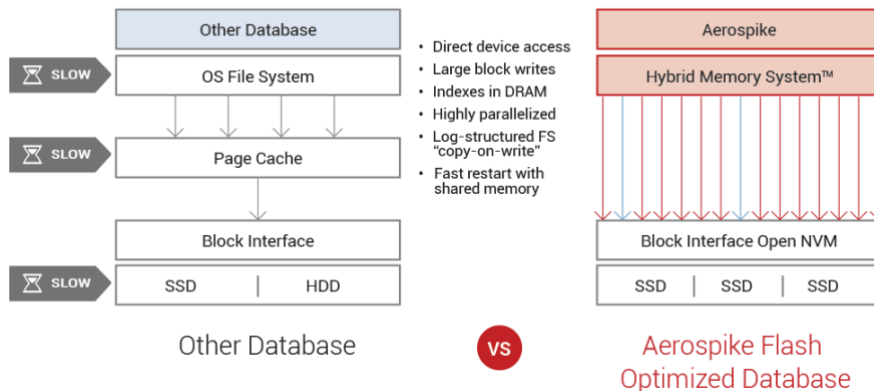


Figure 2: Aerospike's patented Hybrid Memory Architecture

# Product Brief: Aerospike Enterprise Edition Database

## Benefits

- **Unmatched Uptime and Reliability** - Aerospike provides high availability and a demonstrated uptime of five 9s, enabled by its Dynamic Cluster Management and Smart Client technology. This allows customers to focus on their business instead of dealing with operational issues.
- **Reduces Complexity and Total Cost of Ownership** – Aerospike lowers cost and solves server sprawl by leveraging either Flash or Intel® Optane™ DC Persistent Memory instead of DRAM. With fewer nodes each with higher uptime and reliability, architectural complexity can be reduced. Plus, Aerospike can be deployed anywhere from the Edge, to the Core, to the Cloud of your choice.
- **Predictable Performance at any Scale** – Aerospike customers can manage billions of records for databases of 10s to 100s of TBs well into PBs without losing performance, without the complexity nor unreliability that comes with server sprawl. Aerospike achieves this breakthrough ability via its patented multi-threaded parallel processing at the CPU, single-hop to data Smart Client™ technology, and its Hybrid Memory Architecture's ability to leverage Flash at DRAM-like speed.
- **Rapid Restart** – The combination of persistence with highly parallel access to other tiers of storage becomes an architectural breakthrough for both high performance and scale. For example, for planned restarts with Aerospike, Intel® Optane™ DC persistent memory provides a minutes-to-seconds restart speedup compared to a DRAM-only cold restart.

## Aerospike Powers Real-time Solutions in these Industries

**Financial Services and Payments:** Fraud prevention, Identity resolution, Intraday/operational trade stores, Algorithmic trading, and Risk modeling & analysis solutions.

**Ecommerce and Retail:** Recommendation engine, Payment fraud prevention, Identity resolution, Dynamic pricing, Data access layer and Messaging/chat solutions.

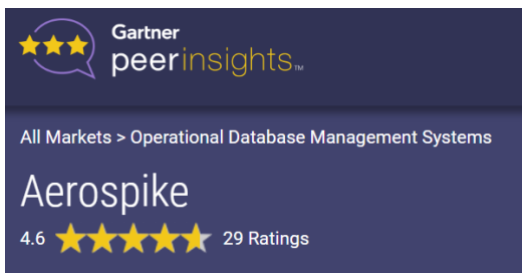
**Ad Tech:** Programmatic buying/real-time bidding, Ad serving & exchange, DMP, DSP and SSP solutions.

**Telecommunications:** Customer 360, Real-time billing, Least-cost routing, Subscriber management, Policy management, Authentication & authorization, and Fraud detection.

**Online Gaming and Gambling:** Fraud Prevention, In-App Advertising, Social Feeds, Personalization, Real-time Event Tracking.

## Third Party-Reviews deem Aerospike an Industry Leader

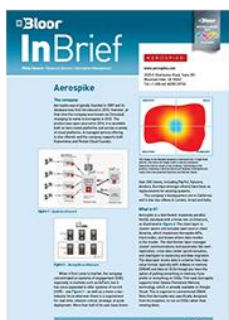
[Gartner Peer Insights - Overall Rating 4.6 out of 5 Stars](#)



[G2 - Leader for Key-Value Stores](#)



[Bloor - Champion in Hybrid Real-Time Data Processing Market Report](#)



## Database Product Features

Aerospike Server License Type - Commercial License
Aerospike Client License Type - Apache v2
Binaries - Tested & Verified
Enterprise Production Support
Hot Patch Availability
<a href="#">Community Support</a>
<a href="#">Queries</a>
<a href="#">Cluster Management</a> <sup>1</sup> (max Cluster size – 128 nodes)
<a href="#">Geospatial Indexing &amp; Storage</a>
<a href="#">User-Defined Functions (UDFs)</a>
<a href="#">Backup &amp; Restore</a>
<a href="#">Aerospike Management Console (AMC): Basic/Advanced Monitoring</a>
<a href="#">Cross Datacenter Replication (XDR)</a>
<a href="#">Strong Consistency</a> <sup>1</sup>
<a href="#">Change Notification</a>
<a href="#">Uniform Balance</a>
<a href="#">All Flash</a> <sup>1</sup>
<a href="#">Intel Optane DC Persistent Memory support</a> <sup>1</sup>
<a href="#">Compression</a> <sup>1</sup>
<a href="#">Fast Restart</a>

<a href="#">Rapid Rebalance</a>
<a href="#">Rack Awareness</a>
<a href="#">Quiescence</a>
<a href="#">Delay Fill Migrations</a>
<a href="#">Durable Delete</a>
<a href="#">Read Page Cache</a>
<a href="#">IPv6</a>
<a href="#">TLS Transport Encryption</a>
<a href="#">Security: ACLs</a>
<a href="#">Data Encryption-at-Rest</a> <sup>1</sup>
<a href="#">LDAP Authentication</a> <sup>1</sup>
<a href="#">Kerberos Authentication</a>
Transactions or Queries per Second - Unlimited
<a href="#">Namespaces</a> <sup>2</sup> (32 max)
<a href="#">Objects per Namespace per Node</a> <sup>2</sup> (0.5 Trillion max)
Development Servers - Free with Commercial License
<a href="#">Aerospike Connect for Spark</a> <sup>1</sup>
<a href="#">Aerospike Connect for Kafka</a> <sup>1</sup>
<a href="#">Aerospike Connect for JMS</a> <sup>1</sup>

<sup>1</sup> Available with additional licensing

<sup>2</sup> See [Known Limitations](#) for more information

### About Aerospike

Aerospike is the global leader in next-generation, real-time NoSQL data solutions for any scale. Aerospike enterprises overcome seemingly impossible data bottlenecks to compete and win with a fraction of the infrastructure complexity and cost of legacy NoSQL databases. Aerospike's patented Hybrid Memory Architecture™ delivers an unbreakable competitive advantage by unlocking the full potential of modern hardware, delivering previously unimaginable value from vast amounts of data at the edge, to the core and in the cloud. Aerospike empowers customers to instantly fight fraud; dramatically increase shopping cart size; deploy global digital payment networks; and deliver instant, one-to-one personalization for millions of customers. Aerospike customers include Airtel, Banca d'Italia, Nielsen, PayPal, Snap, Verizon Media and Wayfair. The company is headquartered in Mountain View, Calif., with additional locations in London; Bengaluru, India; and Tel Aviv, Israel.