

The Projected Total Economic Impact™
Study Commissioned By Aerospike
November 2020

Emerging Technology: The Projected Total Economic Impact™ Of The Aerospike NoSQL Data Platform

Business Benefits And Cost Savings Enabled
By Aerospike

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Total Three-Year Projected Benefits Based On Composite Organization



TCO savings with Aerospike NoSQL Data Platform:
\$2.6M to \$3.9M



Business benefit from operational deployments:
\$473.1K to \$780.4K



Business benefit from transactional deployments:
\$20.5M to \$30.2M



Business benefit from analytical deployments:
\$45M to \$49.8M

Executive Summary

Forrester Research states that traditional data platforms are failing to meet new business requirements that demand a no-compromises combination of real-time data, performance, scale, integrated data, and security. Today, typically three platforms service the needs for workloads: namely transactional, operational, and analytical systems. The movement of data from transactional, to operational, and to finally analytical systems slows down processing, integration, and the generation of timely insights. Disparate technology stacks compromise the delivery of timely, integrated data to various applications, operational systems, and analytics.¹ Blazing-fast performance for both transactions and analytics workloads is the goal of the emerging data platform category that Forrester calls *translytical*. Powered by in-memory technology and a scale-out architecture, this class of platform is designed to support transactions, operational insights, and analytics without sacrificing transactional integrity, performance, scale, and analytical capability.²

Aerospike's NoSQL Data Platform delivered consistent performance at scale for organizations with business requirements that involved high data volumes, rapid read/write rates, and critical systems with their hybrid memory architecture and flash-optimized storage capabilities. Aerospike commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (PROI) enterprises may realize by rolling out Aerospike NoSQL Data Platform per application. The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of the Aerospike NoSQL Data Platform on their organizations, which will vary depending on the size, scale, and scope of applications they support with the Aerospike Platform.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed four enterprise customers across both technology and financial services industries with years of experience using the Aerospike NoSQL Data Platform.

Prior to leveraging the Aerospike NoSQL Data Platform, IT organizations at the interviewed companies struggled to get the necessary performance metrics out of legacy systems supporting their analytical, transactional, and operational workloads. Technology teams were constantly adding servers and resources to their legacy architectures to stabilize performance. Meanwhile, the high cost of ownership for ill-equipped legacy systems restricted organizations' abilities to scale their investment to meet evolving, modern business requirements.

Organizations initially used the Aerospike NoSQL Data Platform to: 1) support the cache of use cases across existing transactional, analytical, and operational workloads and 2) reduce total cost of ownership (TCO) costs associated with legacy infrastructure and additional resources. As Aerospike freed up budget and resources without impacting performance, organizations scaled data volumes used in existing use cases and expanded to include additional use cases to further augment legacy data stores and address performance and scale demands.

Key Findings

Quantified projected benefits. The following present value (PV) quantified benefits are representative of those experienced by the companies interviewed:

Key Outcomes (Three-Year)



PROI
446% to 574%



**Projected
benefits PV**
**\$68.6 million to
\$84.7 million**



Projected NPV
**\$56.1 million to
\$72.1 million**



Total costs
\$12.6 million

- › **Reduced server footprint by 55% to 75% on average each year.** Prior to using Aerospike NoSQL Data Platform, additional servers were continually added to legacy architectures to achieve performance expectations. With Aerospike, the overall number of required servers is reduced by 50% to 70% in Year 1 alone. By Year 3, server reductions increased by 60% to 80% as more existing workloads were powered by Aerospike. The associated cost savings ranged from \$2.4M to 3.3M over the three-year investment.
- › **Improved developer efficiencies by redeploying .5 to 1.5 FTEs, annually to more value-add work.** Legacy environments required a lot of care and feeding to maintain, and they often went down unexpectedly. With Aerospike, developer resources have automation and monitoring tools at their disposal that reduced the amount of work required to maintain and scale the infrastructure. Additionally, Aerospike's improved system availability meant less problem-solving work for developers. In total, the redeployed developer resources cost savings ranged from \$186.5K to \$559.5K over the three-year investment.
- › **Total business value from a transactional deployment ranged from \$20.5M to \$30.2M.** Transactional deployments supported business uses, such as fraud detection on payment transactions. In such cases, Aerospike's improved performance in fraud detection recovered revenue for the business. The total averaged business impact from transactional deployments, as expressed through improvements to fraud detection, ranged from \$20.5M to \$30.2M for the three-year investment.
- › **Total business value from an operational deployment ranged from \$473.1K to \$780.4K.** Operational deployments supported business uses, such as intraday trade processing and running account balances. In such cases, Aerospike's improved availability limited system downtimes that previously impacted trade accuracy and account access for customers. Reduction in system downtime led to more accurate trade processing and better response times that improved customer experiences. The total averaged business impact from operational deployments, as expressed through the reduction in system downtime, ranged from \$473.1K to \$780.4K for the three-year investment.
- › **Total business value from an analytical deployment ranged from \$45M to 49.8M.** Analytical deployments supported business uses, such as personalized ad and recommendation engine decisioning. In such cases, Aerospike's improved data throughput, made those decisions more accurate and, therefore, contributed to improved conversion rates. Improved conversion rates contributed to profit growth. The total averaged business impact from analytical deployments, as expressed through improved conversion rates, ranged from \$45M to \$49.8M for the three-year investment.

Unquantified benefits. The interviewed organizations experienced the following benefits, which are not quantified for this study:

- › **Better customer experiences.** A main driver of the Aerospike investment was to support customer-centric business needs, such as intraday trade, payment transaction processing, and to power customer experience solutions. Therefore, better performance would not only fuel profit growth, but it would also improve customer experiences. Fewer system downtimes and faster response times experienced with Aerospike helped meet intense customer expectations around system availability, accuracy, and speed.

- › **Peace of mind.** The story of scale told through the Aerospike investment would not be possible without their proven performance that facilitated development and growth by mitigating issues and improving availability to earn the *forgotten system* moniker. Additionally, Aerospike support lent expertise and built trust along the way.

Costs. The interviewed organizations experienced the following risk-adjusted PV costs:

- › **Costs associated with the Aerospike investment.** Costs associated with the Aerospike investment included fees to Aerospike for annual licensing and ongoing support and training seats. Additionally, one-time fees to Aerospike Professional Services during implementation facilitated the data migration effort. There are also fees associated with Aerospike servers that scale with the investment in the platform. Resources are required for implementation and ongoing support of the investment on the customer end as well, resulting in cost for time spent.

Forrester modeled a range of projected low-, medium-, and high-impact outcomes based on evaluated risk. This financial analysis projects that the composite organization accrues the following three-year net present value (NPV) for each scenario by enabling Aerospike NoSQL Data Platform:

- › Projected high impact of a \$72.1 million NPV and projected ROI of 574%.
- › Projected medium impact of a \$64.4 million NPV and projected ROI of 513%.
- › Projected low impact of a \$56.1 million NPV and projected ROI of 446%.

The New Tech TEI methodology helps companies demonstrate and justify the projected tangible value of technology initiatives to both senior management and other key business stakeholders.

New Tech TEI Framework And Methodology

From the information provided in the interviews, Forrester has constructed a New Technology: Projected Total Economic Impact™ (New Tech TEI) framework for those organizations considering implementing the Aerospike NoSQL Data Platform.

The objective of the framework is to identify the potential cost, benefit, flexibility, and risk factors that affect the investment decision. Forrester took a multistep approach to evaluate the projected impact the Aerospike NoSQL Data Platform may have on an organization:



DUE DILIGENCE

Interviewed Aerospike stakeholders and Forrester analysts to gather data relative to Aerospike NoSQL Data Platform.



CUSTOMER INTERVIEWS

Interviewed four organizations using Aerospike NoSQL Data Platform with years of experience and positioned to scale their investment to obtain data with respect to projected costs, benefits, and risks.



COMPOSITE ORGANIZATION

Designed a composite organization based on characteristics of the interviewed organizations.



PROJECTED FINANCIAL MODEL FRAMEWORK

Constructed a financial model projection representative of the interviews using the New Tech TEI methodology and risk-adjusted the financial model based on issues and concerns of the interviewed organizations.



CASE STUDY

Employed four fundamental elements of New Tech TEI in modeling Aerospike NoSQL Data Platform's potential impact: benefits, costs, flexibility, and risks. Given the increasing sophistication that enterprises have regarding ROI analyses related to IT investments, Forrester's TEI methodology serves to project a complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the New Tech TEI methodology.

DISCLOSURES

Readers should be aware of the following:

This study is commissioned by Aerospike and delivered by Forrester Consulting. It is not meant to be used as a competitive analysis.

Forrester makes no assumptions as to the potential ROI that other organizations will receive. Forrester strongly advises that readers use their own estimates within the framework provided in the report to determine the appropriateness of an investment in the Aerospike Data Platform.

Aerospike reviewed and provided feedback to Forrester, but Forrester maintains editorial control over the study and its findings and does not accept changes to the study that contradict Forrester's findings or obscure the meaning of the study.

Aerospike provided the customer names for the interviews but did not participate in the interviews.

The Aerospike NoSQL Data Platform Customer Journey

BEFORE AND AFTER IMPLEMENTING AEROSPIKE

Interviewed Organizations

For this study, Forrester conducted four interviews with Aerospike NoSQL Data Platform customers. Interviewed organizations include the following:

INDUSTRY	REGION	INTERVIEWEE(S)	CURRENT USE CASE
Financial services	Multinational, US HQ	—VP, technology —technical director	Financial services — risk calculation for trade processing
Financial services	Multinational, US HQ	Senior engineering manager	Financial services — fraud assessment on payment transactions
E-commerce	Multinational, US HQ	Senior manager	New tech — recommendation engine
Software and tech services	Multinational, US HQ	Head of engineering	New tech — personalization

Key Challenges

Prior to using the Aerospike NoSQL Data Platform to support various workload types that fuel business needs, companies experienced the following challenges:

- › **High expenses.** Interviewed organizations had high expectations of their legacy systems in terms of latency, throughput, and resiliency. There were very high costs associated with achieving the required memory and power (electricity, etc.) of their business use cases with existing mainframe systems. Additionally, many resources were required to run and manage legacy systems due to lack of available monitoring and automation tools that would make development resources more productive. Previous solutions also did not have consistent and reliable uptime and availability when dealing with complex, translytical use cases. They often went down, causing unexpected additional work for development teams that derailed them from daily work.
- › **Limited ability to scale.** The business use cases running on legacy systems required those systems to handle large volumes of data and maintain fast and reliable response times. Each interviewed organization wished to add more data to existing workloads or scale horizontally to include more highly transactional, analytical, or operational use cases all while maintaining or improving system performance. The cost and resource restrictions of the legacy systems became a barrier to scaling both data volumes and use cases.

“Our previous systems required a lot of care and feeding, and we had to build a structure around it and manage it. And, on top of that, every two to three weeks we were having some unknown issues come up.”

Head of engineering, software and tech services

“We had a serious technology challenge. The caching systems that were available in the market leveraged memory and lacked resiliency. Some of the systems required heavy memory to achieve and guarantee the throughput we needed.”

Senior engineering manager, financial services

- › **Restrictive performance.** Ultimately, limitations from legacy systems and their inability to handle the targeted business use cases effectively, impacted business performance. The resulting performance effects could mean millions of dollars of loss for the organization, given the large scale and critical nature of business use cases such as fraud detection, recommendation engines, and trade processing. These examples represent the transactional, analytical, and operational workloads where large data sets need to be processed quickly and reliably. Any performance failures resulted not only in negative revenue impact but also reputation damage and customer dissatisfaction as well.

“In our old environment, we had a lot of different technologies working together that were all overbuilt and overused. They worked functionally, but [they] did not perform well without a ton of bandwidth.”

*Senior engineering manager,
financial services*

Key Results

The interviews revealed that key results from the Aerospike NoSQL Data Platform investment include:

- › **Optimized data storage and capacity to better fit use cases.** With the Aerospike NoSQL database, organizations were able to reduce storage footprints and save on associated infrastructure costs without sacrificing performance through Aerospike’s flash-optimized storage capability. Additionally, the Aerospike database was easier to manage, as resources were equipped with automation tools that mitigate development efforts previously required to add clusters and replicate data across data centers. Resources also benefited from more reliable system availability with Aerospike. Less downtime and fewer issues coupled with monitoring dashboards and tools, relieved resources from the burden of unexpected work. The interviewed organizations found that the Aerospike database better fit their business applications and saved on costs associated with infrastructure and resource time spent maintaining, monitoring, and developing them.
- › **Better performance allows for a scaled technology investment.** With Aerospike, the interviewed organizations experienced better performance despite cutting costs associated with infrastructure and resources. The mitigated development efforts and fewer system restrictions to throughput and performance, allowed the organizations to grow their investment in Aerospike. Organizations, therefore, added more data to existing use cases and expanded to new use cases that fit the complex translytical characteristics.
- › **Business growth and improved customer experiences.** Interviewed organizations grew their investment in the Aerospike database without disruption to the business, and they managed to simultaneously improve performance metrics. Less system downtime and better performance impacted business value experienced through the investment in the appointed application areas. For example, applying more data to decision-making — for customer experience and recommendation engine use cases — allowed the organization to improve conversion rates. Additionally, as the applied use cases were all business-focused and customer-facing, the organization improved customer experiences through better, more reliable system performance as well.

“With Aerospike, the development time is very fast. NoSQL is very developer-friendly. So, we are dealing with hundreds of terabytes of data with just a couple of people managing everything and that they are part-time, they are not even full-time. Developers have more flexibility in that they can store their objects the way they want as it is, as long as the performance is not getting impacted.”

Technical director, financial services

“Aerospike becomes the forgotten system because it has no issues of any kind. The biggest benefit I got was the operational stability I was getting out of the system in that I didn’t have any headaches. With our old system, I had a full team managing it and, literally, every week, there was something to fix.”

Head of engineering, software and tech services

Composite Organization

Based on the interviews, Forrester constructed a TEI framework, a composite company, and an associated ROI analysis that illustrates the areas financially affected. The composite organization is representative

of the companies of the four customers that Forrester interviewed and is used to present the aggregate financial analysis in the next section. The composite organization that Forrester synthesized from the customer interviews has the following characteristics:

Description of composite. The composite organization is a global, billion-dollar conglomerate with a strong brand and a large customer base. The previous environment consisted of 600 on-premises servers and six dedicated development resources to support the existing workloads.

Deployment characteristics. The composite organization initially reduced the 600 on-premises servers that were expensive to manage and maintain with Aerospike. In reducing the server footprint, the composite organization was also able to redeploy some of the dedicated development resources to further reduce costs. The organizations simultaneously grew the investment in Aerospike to add data to existing use cases and to expand to include new use cases.

The type of workloads that the composite organization targeted for Aerospike fall into the translytical classification, in that they are either transactional, operational, or analytical in nature.

- › **Transactional** classification means new data is created that represents an exchange of value with a customer and/or immutable business event.
 - **Relevant use case for calculation:** revenue retention from better fraud management as experienced through the Aerospike investment.
- › **Operational** classification means existing and/or new data to support a transaction and/or reference data for a business and/or customer-facing application.
 - **Relevant use case for calculation:** cost avoidance from improved system uptime and availability as experienced through the Aerospike investment.
- › **Analytical** classification means historical data used for business insights such as reports, dashboards, ad hoc queries, training machine-learning models, and/or any other form of analytics.
 - **Relevant use case for calculation:** profit growth from improved conversion rates in online sales as experienced through the Aerospike investment.

The composite organization utilizes the Aerospike platform to support each variety of the above workload types. As such, the composite organization realizes business value from each transactional, operational, and analytical use case.



Key assumptions:

- \$1B conglomerate
- Worldwide operations
- 600 legacy on-premises servers
- Initially, six FTEs dedicated to development

“Our biggest benefit has been the extreme performance as far as what Aerospike can actually do, compared to any other database or cache system. Also, of course, high availability, so we don't have to worry about nodes going down or a zone in the data center going down. You still have 100% of the data available. It's easy to scale in that as we reach memory, or disk, or processing power, we can easily add more nodes

Senior manager, e-commerce

“We have billions of data points, and we need to make decisions in milliseconds based on that data. The majority of what we're looking for were very fast response times, the ability to handle a lot of data, and high reliability.”

Senior manager, e-commerce

“We started with a single use case, from there we've brought on 40 or so other different development app groups within the organization to use Aerospike as either a cache or a database source. So, these are either brand new projects starting up or moving over from our old infrastructure. Today, we have 75 individual use cases and are bringing on one to two new ones a week.”

Senior manager, e-commerce

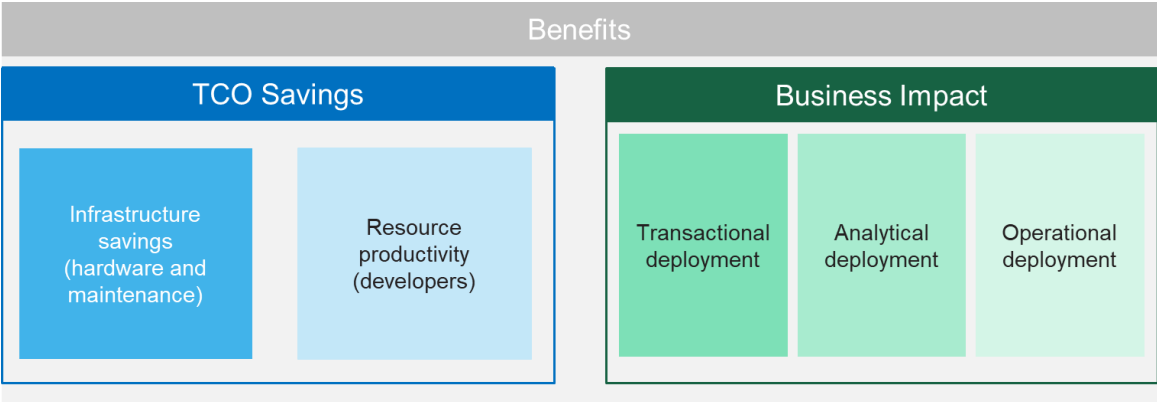
Financial Model Considerations

There are two aspects that make the TEI analysis of Aerospike's NoSQL Data Platform unique:

- 1) The interviewed organizations implemented workloads on the Aerospike platform that were *either* transactional, analytical, or operational in nature. These workloads supported an even wider set of business needs that drove value in different ways.
- 2) Interviewed organizations have chosen to scale their investments in Aerospike depending on where and how their business needs have changed and will continue to change over the course of the investment.

To account for the variable business needs and ways in which they can derive value, Forrester calculated specific use-case deployments and generalized the set of business benefits at the workload category-level.

At a high level, the benefit modules can be categorized as either TCO benefits (blue) or business benefits (green).



The TCO savings are modeled against the composite organization's legacy environment (as described in the Composite Organization section), and those savings can be extrapolated by readers as such.

The business impact benefits are where the high variabilities come into play. To model these benefits for the composite organization, Forrester utilized the specific examples provided by the interviewed organizations to calculate the benefit impact as it relates to the interviewed organization that deployed that use case. For example, to express the business value derived from transactional deployments, the example use case in that deployment area, better fraud detection, was modeled out and included in the ROI calculation. As described in the Composite Organization section, Forrester assumes that the composite organization experienced business benefits from each deployment type. The reader should evaluate which deployment types are applicable to their targeted Aerospike workloads and calculate the financial impact accordingly.

Analysis Of Benefits

QUANTIFIED BENEFIT DATA AS APPLIED TO THE COMPOSITE

Total Projected Benefits

PROJECTED BENEFITS	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Total projected benefits (low)	\$19,884,817	\$28,497,763	\$35,930,263	\$84,312,842	\$68,623,915
Total projected benefits (mid)	\$22,887,763	\$32,433,653	\$39,123,653	\$94,445,068	\$77,005,908
Total projected benefits (high)	\$25,938,653	\$35,494,635	\$42,267,135	\$103,700,422	\$84,670,926

Reduced Infrastructure Costs

Interviewed organizations agreed that their legacy servers were not only expensive and difficult to manage, but they also didn't fit the high data volumes and throughput required of the appointed business cases. As a result, many additional servers were required to achieve output expectations. With Aerospike, organizations realized a reduction in their overall server footprint without sacrificing performance. Ultimately, this allowed organizations to position themselves for future business growth by expanding their investment in Aerospike and increasing the number of business uses powered by the Aerospike platform.

- › A senior engineering manager at a financial services organization explained that in their legacy environment, they utilized 600 servers for 14 TB of data across multiple data centers. With Aerospike, they consolidated their 600 servers down to 60 for the same amount of data. And as they scaled their investment with Aerospike, they further compounded their cost savings and ultimately landed at one-twentieth of the cost of their legacy servers, due to the memory solution that Aerospike offered.
- › An e-commerce company reduced their legacy servers from 60 down to seven with Aerospike. The senior manager added that the Aerospike servers: “[Allowed for] a lot less configuration, integration, and maintenance, even though the legacy servers were open source and free, and with Aerospike, we were paying for the enterprise version. With the reduced number of servers, Aerospike came out on the lower side of the cost equation.”
- › Additionally, the e-commerce company grew their investment with Aerospike to host 21 TB of data and continue growing the data hosted with Aerospike at a rate of 130% annually.

Modeling and assumptions. Based on the customer interviews, Forrester modeled the financial impact for the composite organization with the following estimates:

- › The composite organization required 600 on-premises servers in their legacy environment.
- › With the Aerospike NoSQL Data Platform, the number of servers required to host the same amount of data in the legacy environment reduces, on average, by 50% to 70% in Year 1.

The table above shows the total of all benefits across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total benefits to have a projected PV range of \$68.6 million to \$84.7 million.

“With Aerospike, we have better performance with a smaller server footprint.”

Head of engineering, software and tech services

- › The composite organization migrates more of their legacy servers to Aerospike over the three-year investment as the platform demonstrates its' high performance, and it feels more comfortable elevating their own risk appetite. As a result, server reductions improve by 60% to 80%, on average, by Year 3.
- › The cost per server in the prior environment totals \$12K. The composite organization recoups 25% of the total server costs when they are decommissioned.

This yields a three-year projected PV ranging from \$2.4 million to \$3.3 million.

Reduced Infrastructure Costs: Calculation Table					
REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
A1	Servers required in prior environment (on-premises)	Interview	600	600	600
A2 _{LOW}			50%	55%	60%
A2 _{MID}	% servers reduced with Aerospike	Increases by 20% YOY (rounded)	60%	65%	70%
A2 _{HIGH}			70%	75%	80%
A3	Cost per server in prior environment	\$12K/server	\$3,000	\$3,000	\$3,000
At_{LOW}			\$900,000	\$990,000	\$1,080,000
At_{MID}	Reduced infrastructure costs	A1*A2*A3	\$1,080,000	\$1,170,000	\$1,260,000
At_{HIGH}			\$1,260,000	\$1,350,000	\$1,440,000
Three-year projected total: \$2,970,000 to \$4,050,000			Three-year projected present value: \$2,447,784 to \$3,343,050		

Developer Efficiencies

Interviewed organizations saw an opportunity to make their developers more efficient through the Aerospike investment. Not only did their legacy environments require large volumes of servers to host all the data powering their business uses, but the infrastructure itself also required many resources to develop and maintain it. Organizations found Aerospike incredibly developer-friendly, and therefore they were able to reduce the number of resources required on an ongoing basis.

- › A software and technology organization expressed that they needed a team of 10 to 12 FTEs on a continual basis to finish and run their data clusters on their legacy infrastructure. With Aerospike, they reduced that down to 0.25 FTEs for the initial targeted use case. To handle the data and server volume growth they have since seen with Aerospike, the same organization estimated that they would have needed 25 FTEs to manage in their old environment. Instead, they believe that they will not exceed 3 to 4 FTEs total with the Aerospike platform.
- › What this did for the software and technology organization, was allow them to redeploy operational resources to other products and more innovative or complex project work.

- › A financial services organization said that they doubled their initial investment with Aerospike to a total of 1,200 servers without adding a single developer resource. With their legacy infrastructure, they would have had to double their people footprint in parallel with their server growth. Aerospike offered automations and expertise that made the smaller number of existing resources more efficient.
- › Another financial services organization explained how they were able to add a lot of capacity without any new development. With Aerospike, they were able to reuse extensions when adding new hardware to avoid the two to four weeks of development work that was previously required in their old environment to develop drainers and the like. They said: “That work would have lasted two to four weeks and required six to seven developers, never mind the cost for hardware and memory. With Aerospike, we have added multiple use cases to the platform and grew to 600 to 800 TB of data to ultimately expand the business while maintaining the scale of our technology organization.”
- › The same financial services organization gave cross-data center replication efforts as another example of time savings for development efforts with Aerospike. They said, “Aerospike removes the need for custom replications by connecting two previously isolated clusters so that any change in one region, will be reflected in the other region automatically.”

“The Aerospike platform is easy to scale. As soon as we reach either memory, or disk, or processing power, we can easily add more nodes. Adding those new nodes does not cause any disruption in service in Aerospike. The cross-data center replication is very positive as far as groups wanting their data in all the different data centers without them having to do the development work of that.”
Senior manager, e-commerce

Modeling and assumptions. Based on the customer interviews, Forrester modeled the financial impact for the composite organization with the following estimates:

- › The organization has six total developers that spend some of their time developing the Aerospike platform for growth and managing the associated infrastructure.
- › With Aerospike, the organization redeploys .5 to 1.5 FTEs, on average, each year to other, more complex project work.
- › The average fully loaded salary for the associated resources is \$150K.

This yields a three-year projected PV ranging from \$186.5K to \$559.5K.

Developer Efficiencies: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
B1	Number of developers		6	6	6
B2 _{LOW}			0.5	0.5	0.5
B2 _{MID}	Developer time efficiencies (FTE)		1	1	1
B2 _{HIGH}			1.5	1.5	1.5
B3	Average fully loaded compensation	Assumption	\$150,000	\$150,000	\$150,000
Bt_{LOW}			\$75,000	\$75,000	\$75,000
Bt_{MID}	Developer efficiencies	B2*B3	\$150,000	\$135,000	\$135,000
Bt_{HIGH}			\$225,000	\$225,000	\$225,000

Three-year projected total: \$225,000 to \$675,000

Three-year projected present value: \$186,514 to \$559,542

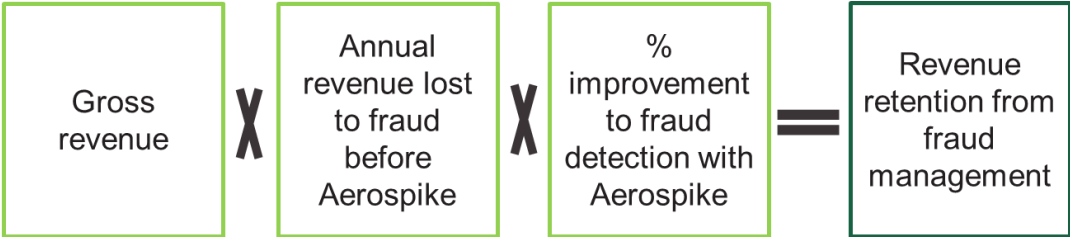
Business Value From Transactional Deployments

Interviewed organizations ascribed business value to their transactional deployments supported on the Aerospike platform.

- › A financial services organization utilized the Aerospike platform to support their fraud detection process on transactions. Before Aerospike, their key value system could process 98.5% of total transactions. The remaining transactions, therefore, were never assessed for fraud. Part of the reason why the prior platform could not process all transactions, was due to delayed response times. In a world where customers' needs and expectations come first, holding up a transaction to process for fraudulent activity was not an option.
- › In terms of impact, a completed transaction that has not gone through fraud detection could have resulted in a false positive or a false negative. In either case, the organization's bottom line is impacted as is their reputation with their customer base. They said: "If we let through a fraudulent transaction, we might not see our cut from the customer. The fraud cuts out of the bottom line. We process thousands of transactions a day, if we have to take a cut on even 0.5% of those, it's a massive hit to our organization."
- › With Aerospike, one of the interviewed organizations was able to improve their throughput to process 99.99999% of transactions, saying, "And, on a good day, they can get up to six of those nines."
- › Ultimately, with Aerospike, the financial services organization said that they, "Reduced their memory, and, therefore the costs, but, more importantly, we were able to move four times faster."

Example use case for calculation: To calculate the business value associated with transactional deployments, Forrester assumes that the composite organization utilizes Aerospike to boost their response times and accuracy rates for fraud detection on transactions. The faster response times allow the organization to process more of the transactions for fraud prevention and meet service-level agreements (SLAs). Additionally, the composite organization can harness more data against the fraud detection decision-making process that improves accuracy rates. The composite organization ultimately retains more of their revenue with the Aerospike investment.

The example calculation for calculating revenue retention from better fraud detection is shown in the illustration below.



Light green: Inputs

Dark green: Calculation outputs

Modeling and assumptions. Based on the example use case and calculation, Forrester modeled the financial impact for the composite

organization with the following estimates:

- › Before the investment in Aerospike, the organization lost 1.5% of revenue to fraud and the associated mitigation efforts annually.
- › The percentage improvement with Aerospike, due to both the volume of transactions processed for fraud as well as a higher accuracy in detection rates, ranges from 55% to 81%.
- › As the composite organization adds more throughput to the fraud detection process, the decision-making gets smarter, but the business impact remains the same across the three years.

This yields a three-year projected PV ranging from \$20.5M to \$30.2M.

Business Value From Transactional Deployments: Calculation Table					
REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
C1	Organizational annual revenue	Composite	\$1,000,000,000	\$1,000,000,000	\$1,000,000,000
C2	Revenue lost to fraud before Aerospike annually		1.5%	1.5%	1.5%
C3 _{LOW}	Improvement to fraud detection with Aerospike		55%	55%	55%
C3 _{MID}			68%	68%	68%
C3 _{HIGH}			81%	81%	81%
Ct_{LOW}	Business value from transactional deployments	C1*C2*C3	\$8,250,000	\$8,250,000	\$8,250,000
Ct_{MID}			\$10,200,000	\$10,200,000	\$10,200,000
Ct_{HIGH}			\$12,150,000	\$12,150,000	\$12,150,000
Three-year projected total: \$24,750,000 to \$36,450,000			Three-year projected present value: \$20,516,529 to \$30,215,252		

Business Value From Operational Deployments

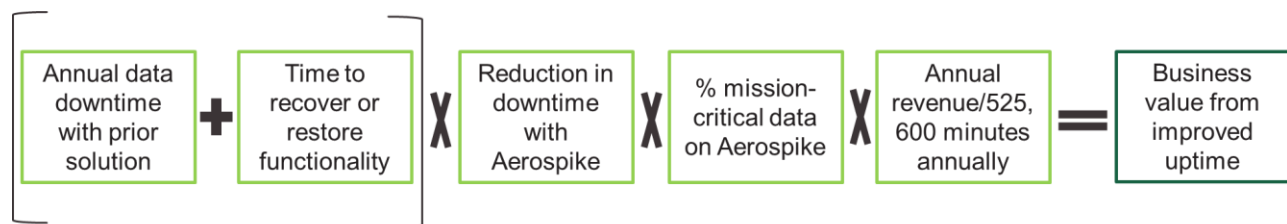
Interviewed organizations ascribed business value to their operational deployments supported on the Aerospike platform.

- › A financial services organization originally invested in Aerospike to alleviate some of the pressure on their mainframe system of record by storing day-to-day operational data that is required to make intraday trading calculations. This use case ensured that customers could access real-time trial balances and the like.
- › Then, Aerospike became a system of record in its' own right as it now holds trade and consumer data 10 years back. This use case ensured that customers could access their transaction history.
- › Aerospike was the right fit for both use cases because of the high volume of customer requests and the rapid response times expected. The financial services organization said: "The difference comes in with the speed of the read and write. To measure latency, it's how much time it will take to process one request. In this, Aerospike performed very well. They are very consistent, for 99%+ of requests, we were getting a response in less than 3 milliseconds."

- › The financial services organization explained how with Aerospike, they could achieve these results without impacting the customers and therefore the business. They said, “When I think about the benefits of Aerospike, there’s the less expense in getting data out of a SQL database, and, two, you’re getting it out faster, and, three, you’re getting it out more reliably without impacting customers with timeout.” Before Aerospike, they said they often experienced 5 to 10 seconds of timeout during a transaction or customer order. If the market changes at all during that timeout, the trade processing can be negatively impacted.
- › To scale the investment with Aerospike, the financial services organization continued to add hardware that improved throughput and performance. They said: “Aerospike offers horizontal scaling. If we want to add more latency and throughput, we can add nodes in the clusters, and it is a very straightforward process. We get the new hardware with the same configuration, and we add it overnight, have it automatically loaded and distributed. In this way, we immediately increase our throughput.”

Example use case for calculation: To calculate the business value associated with operational deployments, Forrester assumes that the composite organization utilizes Aerospike to improve uptime and business continuity for their intraday trade calculations. Eliminating system downtime avoids potential market changes that could result in processing errors and monetary penalties for the composite organization.

The example calculation for calculating business value from improved uptime and business continuity is shown in the illustration below.



Light green: Inputs

Dark green: Calculation outputs

Modeling and assumptions. Based on the example use case and calculation, Forrester modeled the financial impact for the composite organization with the following estimates:

- › The profit benefit calculated is scaled to the annual revenue size of \$1B.
- › Reduction in downtime ranges from 50% to 95%, on average, in Year 1.
- › Prior to the investment in Aerospike, the organization experienced 90 minutes of system downtime as well as 120 minutes of restorative work annually.
- › As the composite organization continues to add hardware that boosts throughput, uptime improves on average from 65% to 100% in terms of reduction in downtime in Year 3, depending on the where and how the investment is scaled.

- › The composite organization houses 80% of their mission-critical data with Aerospike.

This yields a three-year projected PV ranging from \$473.1K to \$780.4K.

Business Value From Operational Deployments: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
D1	Data downtime with prior solution annually, in minutes		90	90	90
D2	Time to recover or restore full functionality in minutes		120	120	120
D3 _{LOW}			50%	65%	65%
D3 _{MID}	Reduction in downtime with Aerospike		65%	95%	95%
D3 _{HIGH}			95%	100%	100%
D4	Percentage of mission-critical data on Aerospike		80%	80%	80%
D5	Organizational gross revenue	Composite	\$1,000,000,000	\$1,000,000,000	\$1,000,000,000
Dt _{LOW}			\$159,817	\$207,763	\$207,763
Dt _{MID}	Business value from operational deployments	(D1+D2)*D3*D4*D5/525,600 minutes annually	\$207,763	\$303,653	\$303,653
Dt _{HIGH}			\$303,653	\$319,635	\$319,635
Three-year projected total: \$575,342 to \$942,922			Three-year projected present value: \$473,088 to \$780,355		

Business Value From Analytical Deployments

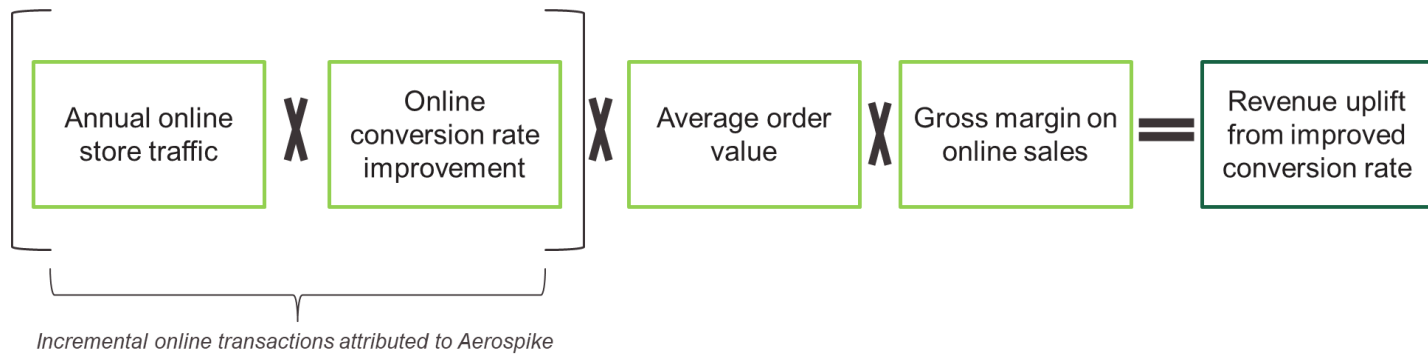
Interviewed organizations ascribed business value to their analytical deployments supported on the Aerospike platform.

- › A technology and software organization applied the power of the Aerospike platform against their new tech use case where high volumes of data were continually thrown against individual consumer profiles to make decisions that personalized ads and drove more business. They said, “In order to execute individualization or personalization in advertising on mobile apps or webpages, we needed to be able to access large volumes of consumer data, quickly.”
- › For the same technology and software organization, their investment continued to scale across additional new tech use cases that involved personalization.
- › For an e-commerce organization, their recommendation engine use case falls into a similar bucket of analytical deployments. They utilized high volumes of consumer and market data to fuel their recommendation engine throughout for the buyer journey on web and mobile sites to improve conversion rates. They said, “We’ve seen about a 6% improvement to conversion rate for products viewed based on recommendations, added to carts, and purchased.”
- › The same e-commerce organization indicated that they continually add data to the decision-making process supported by Aerospike for their recommendation engine to further refine that process and make it more precise.

Example use case for calculation: To calculate the business value

associated with analytical deployments, Forrester assumes that the composite organization utilizes Aerospike to fuel their recommendation engine and improve conversion rates for online sales.

The example calculation for calculating profit improvement from increased conversion rates is shown in the illustration below.



Light green: Inputs

Dark green: Calculation outputs

Modeling and assumptions. Based on the example use case and calculation, Forrester modeled the financial impact for the composite organization with the following estimates:

- › Online channels experience 150M unique visitors in Year 1, and that visitation frequency grows to 181.5M by Year 3 organically.
- › Online conversion rate improvement ranges from 0.70% to 0.80%, on average, in Year 1.
- › As the composite organization adds more data to the decision-making process and extends across more personalization and recommendation use cases, conversion rate improvement ranges from 1.45% to 1.55% in Year 3, depending on the where and how they scale the investment.
- › The average order value is \$100, and the composite organization has a 10% gross margin for online sales.

This yields a three-year projected PV ranging from \$45M to \$49.8M.

Business Value From Analytical Deployments: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
E1	Number of annual online store traffic before Aerospike (unique visitors)	Composite	150,000,000	165,000,000	181,500,000
E2 _{LOW}	Online conversion rate improvement with Aerospike		0.70%	1.15%	1.45%
E2 _{MID}			0.75%	1.25%	1.50%
E2 _{HIGH}			0.80%	1.30%	1.55%
E3	Assumed average order value		\$100	\$100	\$100
E4	Gross margin on online sales		10%	10%	10%
E _{tLOW}	Business value from analytical deployments	(E1*E2)*E3*E4	\$10,500,000	\$18,975,000	\$26,317,500
E _{tMID}			\$11,250,000	\$20,625,000	\$27,225,000
E _{tHIGH}			\$12,000,000	\$21,450,000	\$28,132,500
Three-year projected total: \$55,792,500 to \$61,582,500			Three-year projected present value: \$45,000,000 to \$49,772,727		

Unquantified Benefits

Through the interviews with Aerospike NoSQL Data Platform customers, Forrester identified the following unquantified benefits:

- › **Better customer experiences.** A main driver of the Aerospike investment was to support customer-centric business needs, such as intraday trade and payment transaction processing. With the Aerospike investment, organizations were seeking better performance in order to fuel profit growth and to improve customer experiences. The fewer system downtimes and faster response times being experienced helped organizations meet intense customer expectations around system availability, accuracy, and speed.
- › **Peace of mind.** The story of scale told through the Aerospike investment would not be possible if the organizations did not have full trust and transparency with the vendor. As mentioned, the business uses targeted for Aerospike were often customer-facing and involved large volumes or throughputs of data and critical systems. Aerospike proved themselves through improved system performance with fewer issues that earned the moniker *the forgotten system*. Additionally, hands-on support guided organizations with best practices and expertise through their journeys away from unreliable legacy systems to a world where the underlying data platform was not a barrier to scale but rather an enabler for success.

“The great things about Aerospike was their reputation and their support. It’s definitely been true in our case as far as the support that we get from them is phenomenal — they are very knowledgeable and extremely fast on all hours of the day.”

Senior manager, e-commerce

Flexibility

The value of flexibility is clearly unique to each customer, and the measure of its value varies from organization to organization. There are multiple scenarios in which a customer might choose to implement Aerospike and later realize additional uses and business opportunities, including:

- › **Copious scalability.** With Aerospike’s NoSQL data platform, lower TCO and performance continues to fuel business growth. Organizations plan to strengthen existing use cases with more data to improve upon results and extend to new use cases to see business impact in additional areas. The e-commerce organization summarizes by saying: “For the groups that are using the Aerospike platform already, we expect that they will continue to get bigger and bigger and grow the amount of data they have housed on the platform. As we socialize those results across the organization, we have more and more new groups that are interested in moving their complicated workloads to the Aerospike platform to see similar results in those, new areas.”

Flexibility, as defined by TEI, represents an investment in additional capacity or capability that could be turned into business benefit for a future additional investment. This provides an organization with the “right” or the ability to engage in future initiatives but not the obligation to do so.

Flexibility would also be quantified when evaluated as part of a specific project (described in more detail in Appendix A).

Analysis Of Costs

QUANTIFIED COST DATA AS APPLIED TO THE COMPOSITE

Total Costs

REF.	COST	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
	Total costs (risk-adjusted)	\$0	\$4,666,195	\$5,386,672	\$5,146,051	\$15,198,918	\$12,560,095

Total Costs

Interviewed organizations noted that the costs associated with the Aerospike NoSQL Data Platform investment fell into three buckets:

- › **One-time and ongoing fees paid to Aerospike.** Fees in this category included one-time payments during the implementation period for initial training services and assistance with data configuration, migration, and deployment services. Ongoing fees paid to Aerospike include licensing costs as well as additional training seats and ongoing support.
- › **Fees paid to third-party vendors.** Third-party vendor fees accounted for server costs that supported the Aerospike investment. These costs scaled to the size and scope of the composite organization's environment (i.e., how much data was stored on the Aerospike platform).
- › **Resource time spent.** Interviewed organizations indicated that they required dedicated resources for implementation and ongoing support of the Aerospike investment.

Based on the customer interviews and the composite organization's deployment size, Forrester modeled the financial impact for the composite organization with the following estimates:

- › The composite organization engages with Aerospike for implementation services that include data configuration, migration, and initial training hours. Additionally, the composite organization pays a one-time deployment fee to Aerospike.
- › The composite organization pays annual licensing fees to Aerospike. In addition, they add training seats to their Aerospike contract in Years 2 and 3. Aerospike also charges for ongoing support through an annual fee.
- › Annual server costs are paid to a third-party vendor. These costs are scaled to the Aerospike investment growth each year.
- › One FTE resource dedicates half of their time to the Aerospike investment in Year 1 to cover the implementation period as well as maintenance and support for the composite organization. Dedicated resources grow to 2 full-time FTEs by Year 3 to account for growth of the Aerospike investment in terms of targeted use cases and data volumes stored on the Aerospike platform.

These costs will vary based on:

- › The complexity of organizing and preparing the introduction of Aerospike as a platform.

The table above shows the total of the costs across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total costs to have a PV of \$12.6 million.

Implementation risk is the risk that a proposed investment may deviate from the original or expected requirements, resulting in higher costs than anticipated. The greater the uncertainty, the wider the potential range of outcomes for cost estimates.

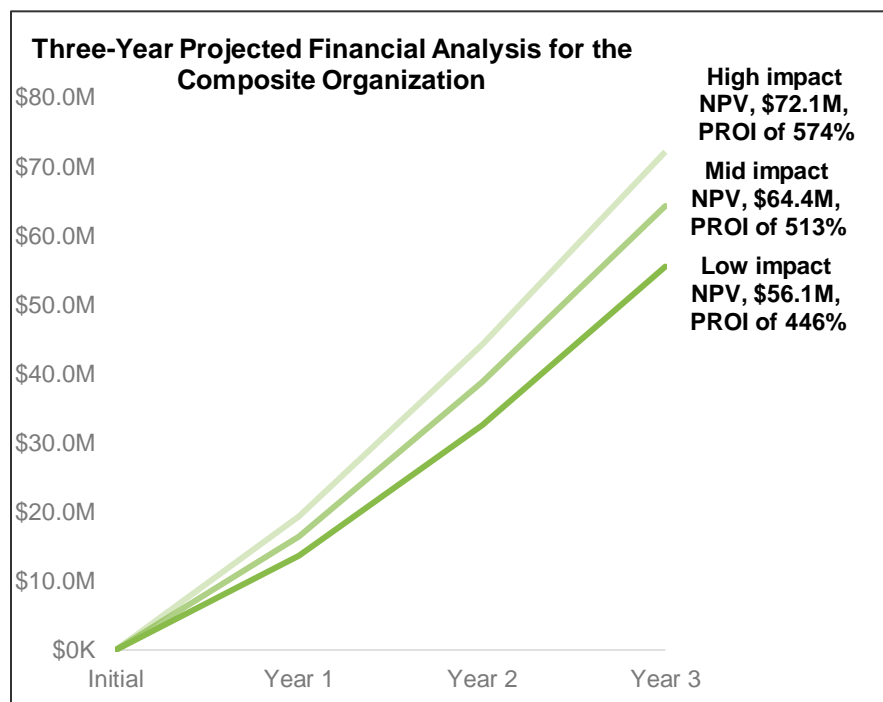
- › The number and salaries of FTEs dedicated to rollout, management, and driving adoption.

To account for these risks, Forrester adjusted this cost upward by 20%, yielding a three-year, risk-adjusted total PV of \$12.6 million.

Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS

Cash Flow Chart (Risk-Adjusted)



The financial results calculated in the Benefits and Costs sections can be used to determine the PROI, NPV, and payback period for the composite organization's investment. Forrester assumes a yearly discount rate of 10% for this analysis.



These risk-adjusted PROI and NPV are determined by applying risk-adjustment factors to the results in each Benefit and Cost section.

Cash Flow Table (Risk-Adjusted)

	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Total costs	\$0	(\$4,666,195)	(\$5,386,672)	(\$5,146,051)	(\$15,198,918)	(\$12,560,095)
Total benefits (Low)	\$0	\$19,884,817	\$28,497,763	\$35,930,263	\$84,312,842	\$68,623,915
Total benefits (Mid)	\$0	\$22,887,763	\$32,433,653	\$39,123,653	\$94,445,068	\$77,005,908
Total benefits (High)	\$0	\$25,938,653	\$35,494,635	\$42,267,135	\$103,700,422	\$84,670,926
Net benefits (Low)	\$0	\$15,218,622	\$23,111,091	\$30,784,211	\$69,113,924	\$56,063,820
Net benefits (Mid)	\$0	\$18,221,567	\$27,046,981	\$33,977,602	\$79,246,150	\$64,445,813
Net benefits (High)	\$0	\$21,272,458	\$30,107,963	\$37,121,084	\$88,501,504	\$72,110,831
PROI (Low)						446%
PROI (Mid)						513%
PROI (High)						574%

Aerospike NoSQL Data Platform: Overview

The following information is provided by Aerospike. Forrester has not validated any claims and does not endorse Aerospike or its offerings.

Aerospike built a distributed NoSQL platform to do what other systems couldn't: scale easily, deliver exceptional — and predictable — performance, provide nearly 100% uptime, guarantee strong data consistency, integrate into existing IT infrastructures, and offer unmatched total TCO. Deployed on-premises or in the cloud, Aerospike's unique design exploits the latest processor, storage, and networking technologies to satisfy demanding business needs.

Mainframe-based solutions were once the only viable option for fast, reliable, and secure transaction processing. Unfortunately, they proved to be expensive to maintain and difficult to adapt to changing business needs; furthermore, there was seldom spare capacity for new applications. Some companies adopted two-tiered architectures with a caching layer in front of a distributed database management system (DBMS). Such infrastructures often suffered from unpredictable data access latencies, server sprawl, and high operational costs. Data availability and consistency issues plagued these architectures, too. Consequently, a number of firms that relied on mainframe or two-tiered solutions turned to Aerospike to augment or offload work. Some even replaced older infrastructures with Aerospike.

Applications that benefit from Aerospike share some or all of these needs:

- SLAs that require sub-millisecond database response times.
- High throughput for mixed workloads (e.g., 3 to 5 million operations per second).
- Support for managing hundreds of billions of records in databases of 100s of terabytes to petabytes.
- High availability and fault tolerance for mission-critical applications.
- High scalability for handling unpredictable increases in data volumes and transactions.
- Adaptable infrastructure for managing varying types of data with minimal effort.
- Strong, immediate data consistency.
- Support for global transactions that span multiple data centers or cloud regions.
- Low TCO.

Aerospike is a shared nothing, distributed DBMS platform optimized for high-scale operational

workloads with a mix of read/write operations. Its schema-free, key-value data model provides considerable flexibility, especially when compared with relational DBMSes, which require upfront schema definitions. Written in C, Aerospike avoids Java runtime inefficiencies and exploits modern hardware, so firms don't need to overprovision servers to accommodate workload growth or spikes. Aerospike Enterprise Edition offers unlimited scalability, cross-site operations, additional security options, additional storage options, and more.

Meeting Hyperscale Enterprise Data Management 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. Aerospike Multi-site Clustering brings the Jepsen validated Strong Consistency to deployments across multiple sites.

Extreme Performance

High Throughput And Low Latency - Multi-threaded parallel processing at the CPU combined with our patented Hybrid Memory Architecture 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/Replication

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.

Synchronous Data Replication - Aerospike Multi-Site Clustering supports always-on, strongly consistent, globally distributed transactions at scale. It provides a true real-time Active-Active solution.

Asynchronous Data Replication - XDR delivers exceptional management and control of asynchronous replication of data across geographically distributed clusters. It can be used to create a global data hub, allowing to route and augment data captured at the edge to other clusters.

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.

Centralized Secret Management Option - Aerospike allows the following security items to be managed by and stored within HashiCorp Vault's KV secrets engine:

- LDAP user credentials & TLS certificates
- XDR remote destination passwords
- Encryption-at-rest key
- Network TLS certificates and keys

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, probabilistic data types such as HyperLogLog, 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).

Cloud Foundations

Aerospike Cloud Foundations currently supports Google Kubernetes Engine (GKE) on Google Cloud Platform (GCP) and includes the following foundational components required for running an Aerospike DBaaS:

- Kubernetes Operator
- Helm Charts
- Prometheus
- Grafana

Integrations

Integration with Existing Data Stores and Systems - for building modern data pipelines and powering highly scalable/low latency AI/ML applications. The Aerospike Connect product line is currently composed of:

- Aerospike Connect for Spark
- Aerospike Connect for Kafka
- Aerospike Connect for JMS
- Aerospike Connect for Pulsar

Deployment Options

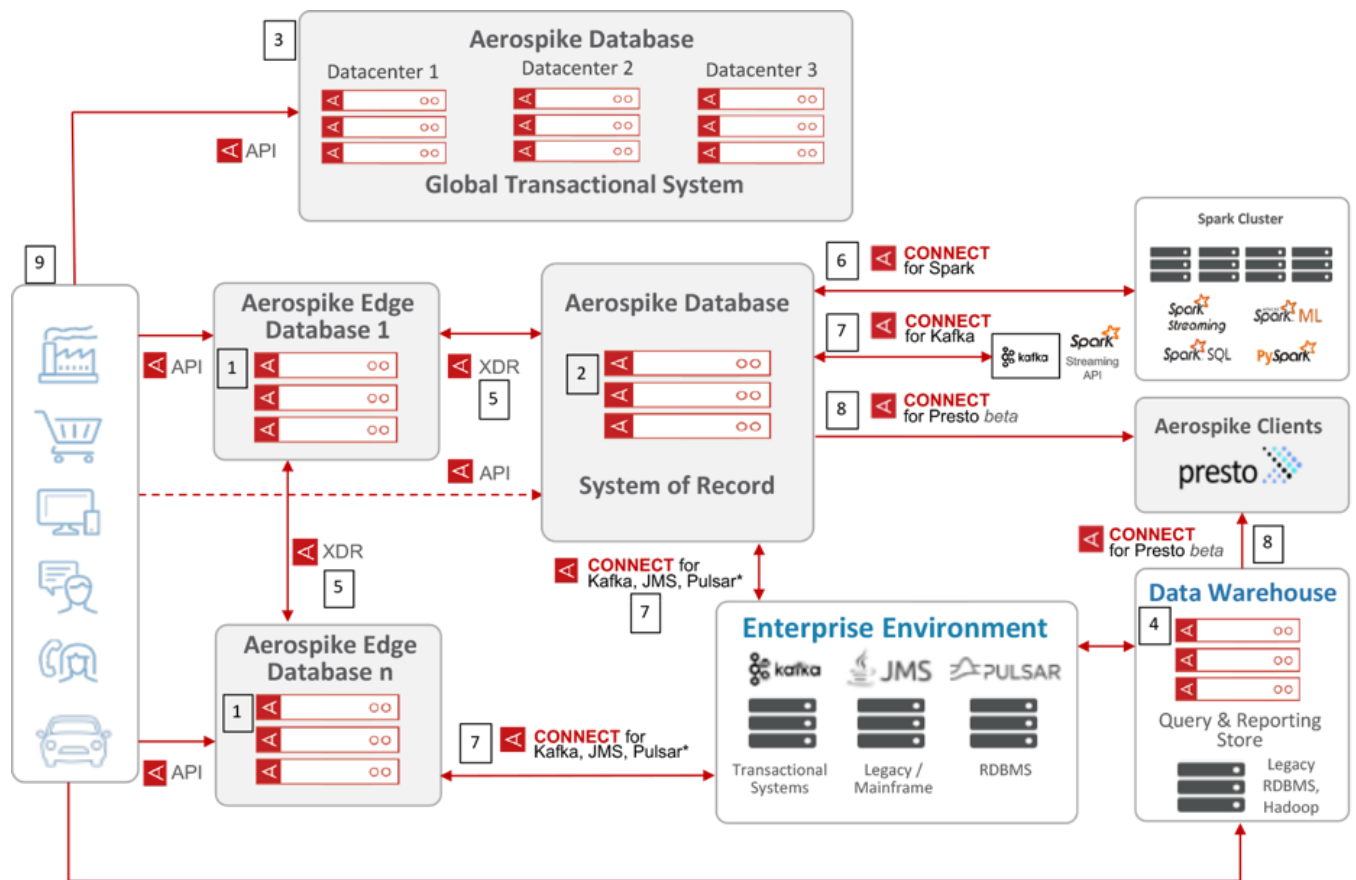
In Data Centers and Private Clouds

In 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.

Aerospike provides unmatched performance at any scale for all components of the end-to-end platform. 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) **Global Transactional System** – Utilizing Multi-Site Clustering, the Aerospike Database can be deployed across multiple geographically separated data centers with high resiliency, automated failovers, and no loss of data.
- 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 multiple geographically dispersed data centers to stay in sync through high performance replication.
- 6) **Aerospike Connect for Spark** – Enables companies to directly integrate the Aerospike Database with their existing Spark infrastructure.
- 7) **Aerospike Connect for Kafka, JMS, and Pulsar** – Makes it easy for enterprises to exchange data bi-directionally between the Aerospike Database and enterprise transactional systems and Legacy Data Stores.
- 8) **Aerospike Connect for Presto** – For accessing data in Aerospike Databases utilizing standard SQL language.
- 9) **Aerospike Clients** – High performing clients offered and supported by Aerospike.



*Note: CONNECT for Pulsar outbound only

Appendix A: Emerging Technology: Projected Total Economic Impact

Emerging Technology: Projected Total Economic Impact (Emerging Tech TEI) is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The Emerging Tech TEI methodology helps companies demonstrate and justify the projected tangible value of IT initiatives to both senior management and other key business stakeholders.

Total Economic Impact Approach



Projected Benefits represent the projected value to be delivered to the business by the product. The Emerging Tech TEI methodology places equal weight on the measure of projected benefits and the measure of projected costs, allowing for a full examination of the effect of the technology on the entire organization.



Projected Costs consider all expenses necessary to deliver the proposed value, or benefits, of the product. The projected cost category within Emerging Tech TEI captures incremental costs over the existing environment for ongoing costs associated with the solution.



Flexibility represents the strategic value that can be obtained for some future additional investment building on top of the initial investment already made. Having the ability to capture that benefit has a PV that can be estimated.



Risks measure the uncertainty of benefit and cost estimates given: 1) the likelihood that estimates will meet original projections and 2) the likelihood that estimates will be tracked over time.

The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1 that are not discounted. All other cash flows are discounted using the discount rate at the end of the year. PV calculations are calculated for each total cost and benefit estimate. NPV calculations in the summary tables are the sum of the initial investment and the discounted cash flows in each year. Sums and present value calculations of the Total Benefits, Total Costs, and Cash Flow tables may not exactly add up, as some rounding may occur.



Present value (PV)

The present or current value of (discounted) cost and benefit estimates given at an interest rate (the discount rate). The PV of costs and benefits feed into the total NPV of cash flows.



Net present value (NPV)

The present or current value of (discounted) future net cash flows given an interest rate (the discount rate). A positive project NPV normally indicates that the investment should be made, unless other projects have higher NPVs.



Projected return on investment (PROI)

A project's expected return in percentage terms. PROI is calculated by dividing net projected benefits (projected benefits less costs) by projected costs.



Discount rate

The interest rate used in cash flow analysis to take into account the time value of money. Organizations typically use discount rates between 8% and 16%. A 10% discount rate is used for this analysis.

Appendix B: Endnotes

¹ Source: “The Forrester Wave™: Translytical Data Platforms, Q4 2019,” Forrester Research, Inc., October 23, 2019.

² Source: March 10, 2020, “Translytical Data Platforms: Delivering Analytics At The Speed Of Transactions,” (<https://www.forrester.com/webinar/Translytical+Data+Platforms+Delivering+Analytics+At+The+Speed+Of+Transactions/-/E-WEB30345?objectid=WEB30345>).