AEROSPIKE

Internet of Things (IoT)

Solution Brief

The Backbone of the IoT Ecosystem

For companies to succeed in the new Industry 4.0 environment that optimizes the use of IoT and edge devices, they will first be required to transform their existing IT architecture and operations. Aerospike is a next-generation NoSQL data platform built to manage data from the core all the way out to the edge of your infrastructure. You'll connect data throughout your IoT networks and across the entire enterprise, delivering insights and analysis at lightning speed to every key stakeholder – helping you build a more intelligent enterprise. Optimal IoT data management is a key enabler and accelerator of your digital transformation efforts.

Great IoT Starts with a Great Database

Your database should be the foundation of your IoT strategy. Don't just roll out IoT devices to meet interim business needs; start from the core and build IoT apps on top to ensure you're maximizing the value of your IoT investment. Aerospike's flexible architecture can be adapted to any edge network, helping you drive large scale IoT adoption, shorten the learning curve for your teams, and derive business benefits more quickly. The platform scales without losing performance, so you can easily add new devices and change requirements on the fly.

Key Features and Technology

5G Architecture

as an onboard database with SSD storage, syncing edge datacenters via XDR, with models and decisioning onboard or edge

2-Speed IT Architecture

slower for certain business functions and faster for devices and higher-engagement situations.

Zero Downtime

fault-tolerant architecture with no single point of failure; add capacity with no service interruption

Manage Device Time-Series Store

capturing time-series data points at a predetermined frequency

Collect More Than a Million

time-series data points per second and need to add to the database in a few milliseconds

SSD-Optimized Architecture

requires less hardware than conventional systems

Make the Most of Your IoT Data

Aerospike makes it easy for you to optimize where your data is managed based on your unique requirements, whether it's at the edge for initial data execution or a centralized location such as cloud or datacenter for secondary analysis. Push the intelligence derived from IoT data to wherever you need, moving data seamlessly and at extremely low latency across your enterprise. AI and machine learning technologies help simplify the routing, processing and analysis of key data, enabling automatic delivery of insights from large volumes of rapidly changing data points and empowering more incisive decision making. Scale your IoT operations to process high volumes of requests simultaneously, performing analysis, shaping actions and response strategies, and reaching resolution in milliseconds.

Industry Use Cases

Industrial Manufacturing

Smart City

Connected Vehicle

Healthcare

Transportation & Logistics

Smart Building

Aircraft Maintenance

Oil & Gas

Key Benefits

Lightning Fast IoT Data Collection and Analysis

- Collect and instantly react to millions of daily interdependent processing events from hundreds of thousands of products, devices, and applications.
- Deliver massive volumes of data points at lightning speeds and at extremely low latency of data transfer to make data immediately available
- Streamline how you collect, connect, deliver, analyze, and package data to improve your business results.

Improved Data Integrity

- Availability: Remain constantly available with zero downtime to mitigate risk of business interruption, data loss, or inaccurate analysis.
- Low Latency: Lower the risk that data will be lost or corrupted as it's transferred from IoT devices to processing centers.
- Enhanced Data Flow: Continually track and manage the lineage and flow of critical IoT data

Faster and More Accurate Analysis

- Ingest volumes of IoT data and apply to analytical models quickly so you can find trends, identify problems, and create solutions fast
- Create dashboarding and relevant visualizations to give clarity to IoT operational data and analyses
- Drive operational excellence and efficiency by making data-driven decisions faster and with greater confidence

Industrial Manufacturing

IoT Data Powers Smart Industrial Manufacturing

Aerospike helps you reduce the amount of time and effort you'll need to review real-time manufacturing, supply chain and inventory data; quickly employ predictive maintenance solutions for industrial equipment, proactively fix problems and delays; and optimize your manufacturing lifecycle. Drill down on a wealth of IoT information to analyze specific challenges and improve manufacturing performance and results. Well-honed IIoT projects can help companies achieve an increase of 20-40% in equipment life and 20-25% increase in overall equipment effectiveness.

Use Cases and Benefits

- Monitor the physical integrity, operational efficiency and real-time asset health of industrial machines and equipment
- Collect equipment sensor data to proactively identify maintenance issues, diagnose failures, and deploy fast solutions
- Optimize production capacity and planning with instant real-time warehouse and factory inventory monitoring
- Track vital assets such as parts and supplies and act on replenishment needs faster and with better accuracy
- Improve manufacturing safety with wearables and environmental sensors to identify potentially dangerous situations

Smart City

Create a Scalable Smart City IoT Architecture

IoT is driving a new era for cities and municipalities who wish to create a smart, data-driven infrastructure that effectively connects its people, businesses and government. Smart cities leverage an array of IoT and edge sensors to enhance city-wide operations, promote energy efficiency, expand citizen services and experiences, and improve traffic flow, public safety, and the environment. Smart city infrastructure intelligently and seamlessly connects everything from building and energy systems to transportation, waste management, environmental controls and public services.

Use Cases and Benefits

- Reduce utility costs with smart grid networks, grid-scale electricity generation, and smart meters
- Build an integrated mobility infrastructure to transport people, vehicles and goods faster, safer and more efficiently
- Create innovative ways to reduce emissions, eliminate waste and ensure long-term sustainability
- Develop a smart waste management system with sensor-equipped bins to optimize waste collection
- Ensure connectivity between IoT sources and stakeholders, and demonstrate the impact and benefits on citizens

Connected Vehicles

Lead the Booming Connected Vehicle Market

Aerospike sits at the core of the rapidly-evolving connected vehicle ecosystem, providing real-time data collection and analysis of IoT sensors loaded in today's automobiles. Aerospike manages data in the ingest system, assimilates data quickly in edge devices, and scales to support millions of connected vehicles and fleets. You'll enhance the reliability of ADAS systems, improve predictive maintenance and driver safety, and leverage onboard user behavior data and preferences for a vast monetization opportunity.

Use Cases and Benefits

- Ingest and process IoT information from individual vehicles to an entire fleet, all at scale
- Improve reliability of ADAS, including adaptive cruise control, anti-lock brakes, collision, high beams, lane departure & more
- Empower core vehicle test systems such as RPM, engine temp, braking frequency, temperature for predictive maintenance
- Deliver safety information in real-time to avoid dangerous situations requiring sub-millisecond reads and writes
- Explore a vast monetization opportunity to collect user behavior metrics, driving habits and entertainment preferences

Healthcare

Improve the Speed and Accuracy of Remote Patient Monitoring

The market for remote patient monitoring is booming, fueled in part by the Covid-19 pandemic. Fast and accurate monitoring and processing of patient data from wearables, biometrics and health monitoring devices is critical to diagnosing and treating patients, preventing medical mistakes, and lowering the cost of medical care. Aerospike ensures that health professionals receive accurate and immediate medical data so they can respond as quickly as possible to patients in need.

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Transportation and Logistics

Track Fleets and Shipping Assets with Ease

The faster you can process the status of every aspect of your transport and shipping assets, the faster you can identify and fix problems and keep your fleets delivering goods optimally. Aerospike delivers more accurate IoT data to help reduce the cost of shipping operations, optimize transportation routes and schedules, provide better visibility of goods in transit, and mitigate risk for employees and cargo. Shipping IoT can reduce damaged goods by up to 50%, increase container utilization by up to 25%, and lower ship navigation time by up to 13%.

Use Cases and Benefits

- Track everything from vehicles and fleets to containers and other assets, from start to finish
- Conduct predictive maintenance and vehicle diagnostics, and analyze fuel and electric management and efficiency
- Monitor supply chain delivery schedules, anticipate delays, and understand developing problems to reroute & reschedule
- Improve accuracy of analysis for container IoT data, such as location, temperature, shocks, and light
- Gain better visibility into operational performance, usage patterns, downtime, and expenditure

Smart Building

Connect Building-wide IoT Data to Lower Costs and Improve the Facility Experience

Smart buildings have a bright future, powered by IoT systems that can improve the design, construction and operations of structures and buildings of all sizes. Aerospike's centralized model for connecting building-wide IoT data helps capture and consolidate information and insights to transform operations and improve the life for the people inside. IoT-powered smart buildings enable energy efficiency, HVAC control, smart lighting, space optimization and security systems to lower costs and improve the daily building experience for occupants.

Use Cases and Benefits

- Consolidate IoT from a diverse array of building endpoints, including energy monitoring, smart grids, HVAC & lighting
- Centralize facility management to proactively monitor, identify, and analyze issues, & ensure cross-functional teamwork
- Automate building automation systems (BASes), including mechanical, electrical, utilities, elevators and plumbing
- Optimize space utilization from sensor-enabled IoT devices to identify underutilized rooms and desks
- Provide IoT-driven security, including cameras, building access control, and video analytics
- Improve the daily building experience, comfort, and productivity for employees and tenants

Aircraft Maintenance

Monitor Aircraft Parts, Components, and Systems from Tip to Tail

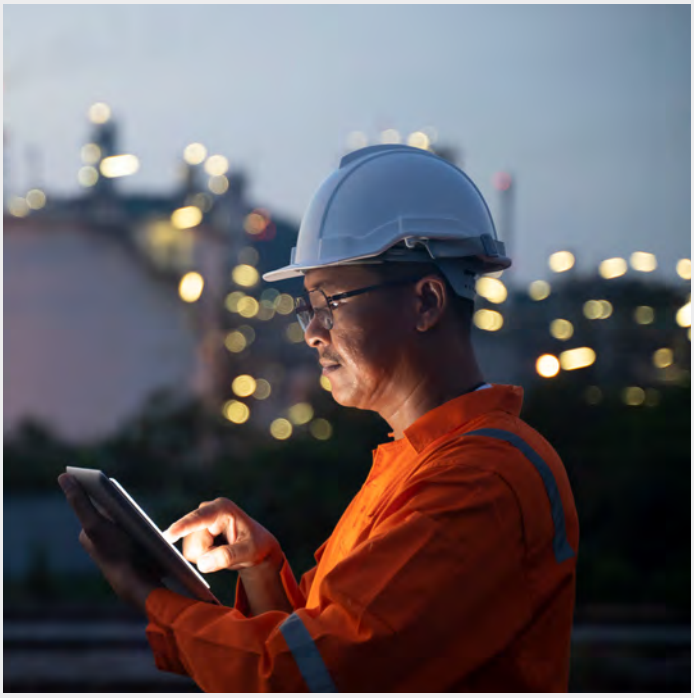
Connected IoT is helping to transform how airlines monitor and maintain aircraft components, systems and parts from tip to tail. Aerospike powers an IoT-driven predictive maintenance system that rapidly identifies anomalies, analyzes causes and determines the health of units and replacements to reduce aircraft downtime. Intelligent IoT streamlines spare parts logistics, utilizes cameras and geo-position data to monitor traffic safety, and improves the customer experience with onboard aircraft sensors.

Use Cases and Benefits

- Empower predictive aircraft maintenance to reduce downtime, enhance scheduling, and optimize turnaround
- Identify anomalies in engineering systems, analyze causes, and determine health of units and replacements
- Streamline spare parts logistics, arrange for delay-driven backup crews, and minimize disruptions.
- Utilize cameras and geo-position data to monitor safety zones and taxiing speeds, as well as airport foot traffic flow
- Identify oversized luggage at check-in and security to reduce overhead bin delays

Oil and Gas

Optimize Oil and Gas Production, Transportation, and Refinery



Industrial IoT is changing the future of the oil and gas sector, which has traditionally used older, inefficient means of monitoring and collecting data. Aerospike modernizes the way you collect and act on vital operational data at every point in the oil and gas lifecycle, from exploration and production to pipelines, storage, refineries, and retail. Faster analysis of IoT sensors helps optimize production, improve transportation and storage, and reduce the time it takes to troubleshoot problems and from days to just minutes.

Use Cases and Benefits

- Monitor wells and pumps to accurately forecast equipment failure and improve condition-based maintenance
- Build a data-enabled infrastructure to leverage geolocation, weather, and log data to improve operations
- Monitor refinery production equipment to identify lost energy or top performance to establish best practices
- Generate new revenue streams with IoT-enabled digital consumer marketing
- Improve visibility to measure and mitigate risk across the supply chain

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.

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