

Connected Vehicle

Solution Brief

The Aerospike Database – the Backbone of the Connected Vehicle Ecosystem

Today's autonomous connected vehicles are loaded with IoT-based systems and sensors that continuously collect a wide array of data and make it immediately available for data-driven analysis. Massive volumes of data come in, and massive volumes of data are generated. That's why you need a powerful, massively scalable database to manage the flow of critical, real-time vehicle information – and take advantage of immense new monetization opportunities. Aerospike can connect data across datacenters globally, manage data at ingest, assimilate streaming data at the edge, and scale to support millions of connected vehicles.

Aerospike is a next-generation NoSQL data platform built to optimize data across every facet of the connected vehicle ecosystem.

The Aerospike flexible architecture can be adapted to any edge network, helping you drive large scale IoT adoption and generate business benefits more quickly. The platform scales without losing performance, so you can easily expand advanced driver-assistance systems (ADAS) and other edge and analysis systems to your connected vehicle infrastructure as the market evolves.

Key Technical Specifications & Benefits

Speed

Collect and instantly react to millions of daily interdependent processing events at lightning speed for instant data exploration.

Availability

Remain constantly available with zero downtime to mitigate risk of data loss or inaccurate analysis.

Low Latency

Lower the risk that data will be lost or corrupted as it's transferred from edge devices to processing centers.

Scale

Ingest and process IoT information from individual vehicles to an entire fleet, all at scale, using parallel processing to support multiple jobs at once.

Enhanced Data Flow

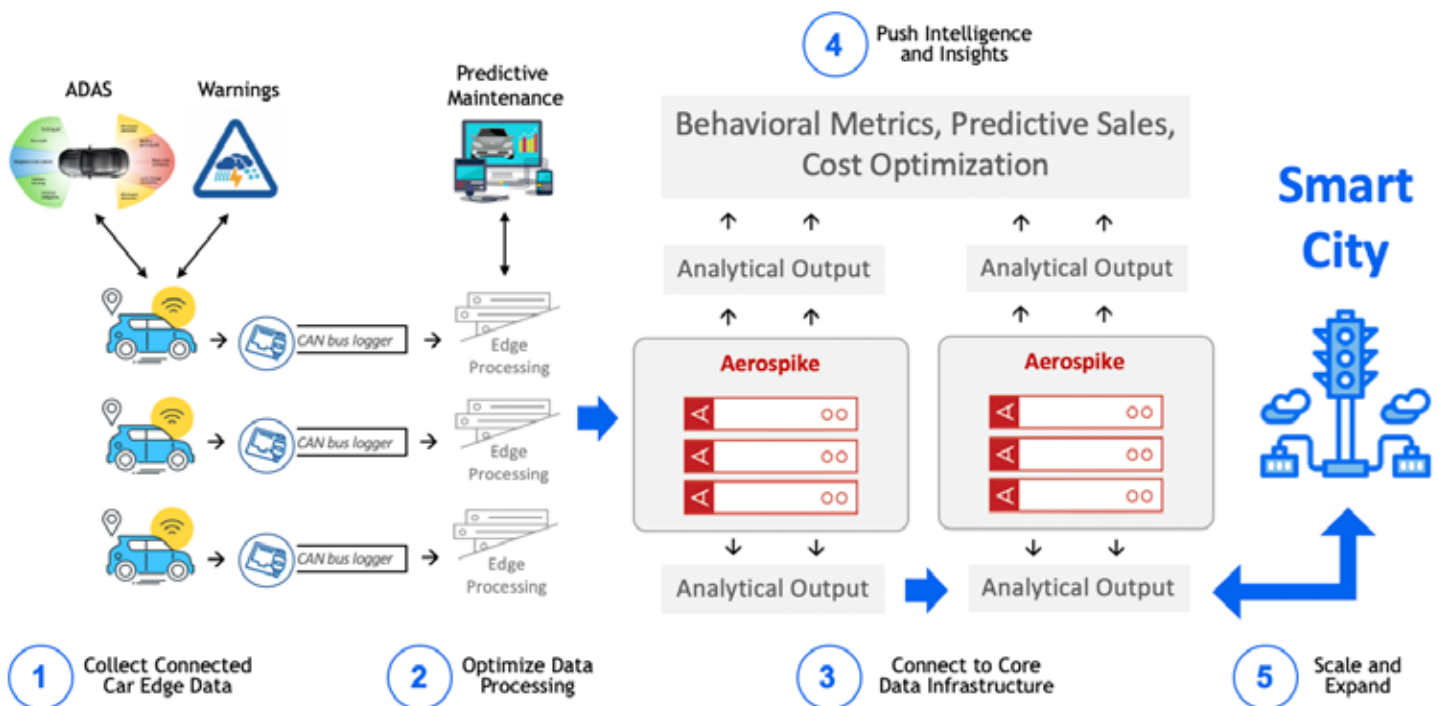
Continually track and manage the lineage and flow of critical connected IoT data.

Make the Most of Your Connected Vehicle Data

Data collection and management is at the heart of the connected vehicle opportunity. Aerospike gives you a powerful platform to streamline how you collect, connect, cleanse, format, and package data from a multitude of sources to improve vehicle safety and deliver valuable driver insights and analysis. You'll optimize where vehicle data is managed based on your requirements, from on-vehicle IoT equipment and CAN bus devices to central processing sources and data lakes via wireless transmission.

Aerospike ensures you can push the intelligence derived from connected vehicle data to wherever you need, moving data **seamlessly** and at **extremely low latency** across the connected ecosystem, including smart city infrastructure to help manage traffic patterns and safety challenges.

Aerospike Connected Vehicle IoT Architecture



Aerospike Powers 5 Types of Connected Vehicle IoT:

1. Advanced Driver-Assisted Systems
2. Systems Predictive Maintenance
3. Car Data (speed, locations, etc.)
4. External Safety Data (road/weather)
5. Driver Data (behavior, marketing)

Ensure Reliable ADAS Safety and Maintenance

Advanced Driver-Assisted Systems (ADAS) and predictive maintenance are mission-critical applications for drivers. Your core infrastructure must be robust enough, fast enough, and adaptable enough to manage a massive amount of rapidly changing data coming from an array of on-vehicle devices. Aerospike's data management platform improves the reliability of ADAS, safety, and maintenance systems by securely connecting IoT-driven metrics for immediate analysis and response within milliseconds.



Aerospike will help your connected vehicle infrastructure to:

- Raise the level of trust with ADAS, including vital functions such as adaptive cruise control, anti-lock brakes, collision warnings, high beam safety, lane departure, traffic signal recognition, and more.
- Empower more accurate diagnostics, predictive maintenance and scheduling for core vehicle test systems such as RPM, engine and oil temperature, braking frequency, ambient temperature, and malfunctioning systems.
- Deliver external road and environmental condition and driver biometrics in real-time to avoid dangerous on-road driving situations that require sub-millisecond reads and writes.
- Use telemetry sensors to track routes, speed, deceleration, traffic patterns and other key metrics.
- Connect both vehicle-to-infrastructure and vehicle-to-vehicle communication to monitor traffic, distances between vehicles, traffic, and speed, eliminating human error and more efficient, safer driving.

Monetize the Driver Marketing Opportunity

Considering the amount of time people spend in their cars, connected vehicles represent a sizable marketing and monetization opportunity. Cars are connecting people to the outside world like never before, and IoT devices are collecting personal preferences on a moment-to-moment basis.

The opportunity is all about big data analytics: how to collect and analyze volumes of driver information and immediately determine how to leverage that data to create revenue and improve customer satisfaction.

Aerospike prepares you to more effectively:

- Collect behavioral metrics, including driver/passenger identity information, driving habits, preferred entertainment and music, and usage patterns of applications, used for targeted marketing and e-commerce.
- Sell auto products or services based on driver consumption, such as navigation, software add-ons, theft protection, vehicle usage, tolls, network parking, and more.
- Reduce costs by gathering onboard product data to optimize warranty and customer costs, and to improve customer satisfaction.
- Track vehicle usage such as speed, location, and average load weight in trunk to be used for insurance, tolls, or direct trunk delivery.
- Enable direct communication within the vehicle, such as speech-controlled messaging, email, calendar, virtual assistant, and proactive navigation.
- Help insurers capitalize on car data by offering usage-based insurance policies and extending understanding of customer behavior

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, European Central Bank, Experian, 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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Key Technical Specifications & Benefits

Low Latency

Sub-millisecond responsiveness at 95th percentile

Performance at Any Scale

Reliably handles millions of transactions per second while efficiently scaling to meet petabyte-range data volume needs

High Availability

Demonstrated uptime of five 9s, enabled by dynamic cluster management, Smart Client, and local and remote replication

Data Consistency

Multi-site clustering supports strong immediate data consistency, multiple locations and automated failovers without loss of data

Global Data Hub

Route data captured at the edge to where it is needed to meet compliance requirements

Low TCO

Patented flash-optimized storage architecture with dynamic cluster management fuel a 40-60% lower TCO over in-memory NoSQL databases

Integrations & Connectivity

Apache Spark™, Kafka, Pulsar, PrestoSQL/Trino and JMS™ to deploy modern data architectures for real-time, mission-critical apps

5G Architecture

Onboard database with SSD storage, sync edge datacenters via XDR, with models and decisioning onboard or at the edge

Enterprise Security

Data Encryption (in-motion, at rest), authentication, authorization, auditing, access control, whitelisting, Hashicorp integration