

## VISIONAST TRANSITIONS FROM MICROSOFT SQL SERVER TO AMAZON AURORA

VisionAST is a SaaS platform that serves the auto, powersports, marine, and RV industries. Through real-time dealer management system (DMS) integration, VisionAST provides dealership decision-makers actionable fixed and variable operations data to more effectively drive service, parts, sales and finance & insurance profits. After a decade of change and growth, VisionAST and the Webapper team identified growing technical debt with the underlying database of the system. Performance bottlenecks and licensing costs loomed.

The goal became clear: migrate database services from Microsoft SQL Server running on Amazon on EC2 to AWS Aurora MySQL. The project plan included migration, extensive testing, and performance validation phases to ensure enhanced performance, scalability, and operational efficiency – with minimal disruption. It also included setting up the environment, migrating data, updating configurations, and thorough testing to confirm that the new system meets operational requirements and performance benchmarks.

### HIGHLIGHTS

- Enhanced Performance
- Simplified Scalability
- Cost Efficiency
- Operational Efficiency
- Improved Reliability & Availability
- Enhanced Security
- New Analytics & Insights
- Greater Customer Satisfaction

# MEET VISIONAST

VisionAST offers a SaaS product that imports data throughout the day from dealer management systems. As data is being imported, the database is also being used for reporting and data entry. Over time, having a shared database introduced performance and maintenance challenges. Webapper led VisionAST through a database migration from Microsoft SQL Server to Amazon Aurora. VisionAST now has a scalable, reliable, and cost-effective database solution that can support the company's advanced analytics goals going forward.

VisionAST is a data-driven analytics platform built for dealers by dealers to improve financial performance.

- Complete DMS Integration
- Real-Time Reporting
- Intuitive Data Filtering
- 24/7 Access

## SalesVision

The flagship platform SalesVision is a comprehensive variable operations reporting system – real-time data drawn from the dealer's DMS that helps drive profit by identifying profit leaks and training opportunities. SalesVision allows a dealer access to multiple locations with a single login, providing management with the ability to rank team members' performances and measure them against pre-defined expectations or goals.

## PowerVision

Extended from the SalesVision platform, PowerVision is tailored for power sports (e.g., jet skis, quads) dealers.

## FinanceVision

The finance components of the SalesVision platform have been packaged in an economical F&I focused solution for warranty agents and their dealers. Warranty agents can remotely access their entire book of business with a single login and spot profit leaks & opportunities in near real-time. SalesVision adds value to the agents' offerings with better account management, income development for the dealer, and accurate reporting for the dealership staff.

# THE NEED FOR CHANGE

## Performance Issues

The lifeblood of the system is data imported from DMS feeds. Throughout the day, data is loaded into the master database. For many years, performance was acceptable, but with growth of data, increasing number of users, and expanding capabilities, performance suffered and reports were occasionally inaccurate. The time had come to add a read replica of the database for reporting.

## Costs

The original architecture of the system never contemplated the growth that VisionAST was experiencing. Expanding infrastructure to meet demand was going to put a strain on the budget. Licensing costs coupled with infrastructure costs were going to be excessive based on remaining with the existing SQL Server database architecture and model. After pricing it out, management wanted to find a more affordable solution within AWS.



## Selecting a Platform

The original application was built using a relational database in Microsoft SQL Server. With a 30-plus year history, SQL Server has been a mainstay for many organizations.

During the assessment phase, it was identified that MySQL was the best choice due to its cost and compatibility with components in the current technology stack. Aurora was chosen over vanilla RDS MySQL for its excellent high-availability, read-replicas, and performance.

Aurora provided the efficiencies we were looking for:

- It's a fully managed service at 25% of the cost of SQL Server licensing.
- It is 5x faster than SQL Server with queries running in seconds not minutes.
- It can scale with VisionAST as they grow. Scaling up with AWS is as simple as pressing a button.

# IMPLEMENTATION



## Timeline

Despite mild objections from stakeholders, the development team estimated the timeline of the transition project – from planning to execution – to be six months. The expected challenge was expected to be “building the plane while still in flight”. That is, new features, bug fixes, and live operations continued in parallel with database migration.



## Risk Assessment

The development team knew that the biggest risk was going to be in testing and go-live. Many complex processes would have to be verified.



## Data Migration Strategy

The developers picked the AWS Schema Conversion Tool (AWS SCT) to convert the existing database schema from MS-SQL to MySQL. They also chose AWS Database Migration Service (AWS DMS), a managed migration and replication service, to move the database quickly, securely, and with minimal downtime. A few manual conversions were also identified.



## Testing & Validation

One of the key testing tools used was Selenium. The goal was to automate testing of data integrity, performance, and functionality on the new platform.



## Cutover Plan

Final switchover from the old database to the new one included planning minimal downtime, as well as rollback procedures. First, the DMS importers would need to be paused, then the migration run, and then testing performed. If testing failed, the system would roll back. Otherwise, go-live meant enabling DMS feeds and allowing users back in.



## Challenges Encountered

Initial research found the greatest challenge to be variations in indexing between MySQL and MS-SQL. Throughout the migration, it was a focal point for performance.



# THE IMPACT

VisionAST's database migration from Microsoft SQL Server to Amazon Aurora MySQL addresses performance issues, scalability concerns, and high licensing costs.

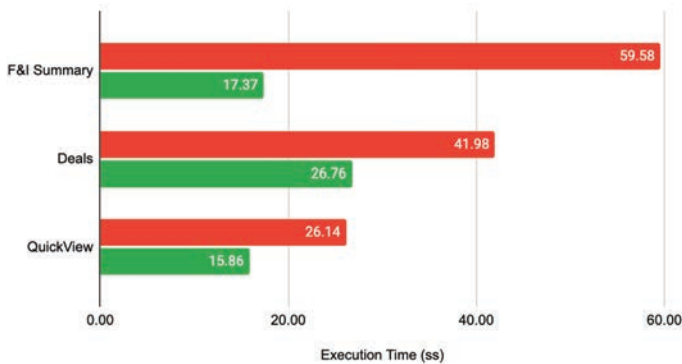
The database migration was the second biggest update in the history of the platform, coming in second only to the initial launch in 2014. This comparison is evident when measured by person-hours spent, complexity, and impact on the system. The results were impressive – core reports now run up to four times faster, enhancing user experience and satisfaction. The new system also offers better reliability, automated backups, and reduced administrative overhead. This migration positions VisionAST for future growth and improved customer service.

## Performance Improvements

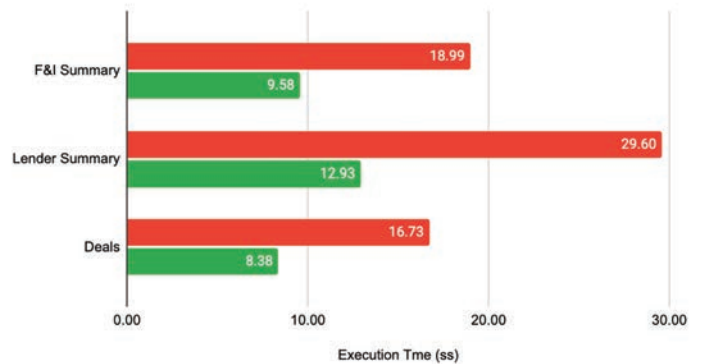
Testing during development revealed significant improvement in query performance and response times. Various system components showed faster data retrieval and processing times, leading to improved application performance and user experience.

For example, the SalesVision F&I Summary, a key report, runs almost 4 times faster. Every module enjoys improvement,

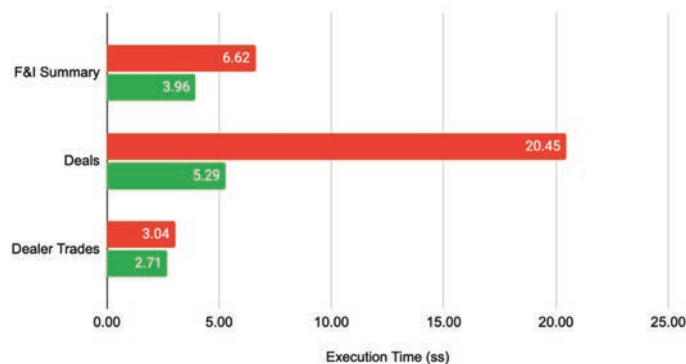
### SalesVision



### FinanceVision



### PowerVision



## Scalability Enhancements

AWS Aurora enables seamless scaling capabilities without the need for extensive reconfiguration or downtime. Over time, VisionAST will have the ability to handle increased workloads. Performance improvements support business expansion – VisionAST can attract and serve more customers, leading to increased revenue.

## Cost Savings

The impetus of the project was budget – VisionAST needed to eliminate high licensing fees associated with Microsoft SQL Server with growth. They now enjoy lower overall operational costs, allowing reallocation of budget to other initiatives.

Adding a read-replica to MS-SQL, VisionAST needed the Enterprise edition, a significant price increase from their Web Edition. To move one database would increase current AWS monthly costs by almost 400%, plus a large upfront fee. Any read replicas would be on top of that.

Migrating to Aurora MySQL, with an upgraded server class, actually reduced monthly AWS costs by 25% with a minor upfront fee. Read replicas still add cost, but with a smaller upcharge.

## Operational Efficiencies

The new system improved automated backups and point-in-time recovery, reducing the risk of data loss and minimizing downtime. In addition, the operations team enjoys reduced manual administrative tasks such as patching, upgrades, and maintenance. There's lower administrative overhead, allowing the team to focus on higher-value tasks.

## Reliability & Availability

VisionAST now leverages Amazon Aurora's high availability and fault-tolerant architecture. The result is improved database reliability & uptime, ensuring continuous service availability for VisionAST's users.

## User Satisfaction

Perhaps the greatest long-term impact is the improvement to user experience. Everything in the application is faster and more reliable. VisionAST is seeing higher customer satisfaction and retention rates.