

# DevOps Logistic Application

Automotive Customer

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# AWS DevOps for Logistics

## CUSTOMER — Leading Automotive Manufacturer

The customer is a leading automotive manufacturer that specializes in high-performance vehicles. They have developed a Logistics Control System to manage all material control processes for logistics, offering an integration and process control level between the shop floor and the company's SAP logistics system for predominantly automated processes.

## CHALLENGE — Efficiently Managing Logistics Processes

The customer faced the challenge of efficiently managing their logistics processes for transporting full and empty containers with a driverless transport system (FTS). The system needed to integrate with the existing SAP infrastructure and support additional process support functions. **The challenges included:**

- Developing a **cost-effective solution** that could handle the complexity of the logistics processes while maintaining high performance and reliability.
- Ensuring that the system could **easily adapt** to new requirements, such as changes in the logistics processes or the introduction of new technologies.
- **Scaling** the system to accommodate growth in user base, operations, or geographical coverage without compromising performance or incurring significant costs.
- **Integrating** with a **variety of legacy on-premises systems**, utilizing multiple API technologies, and handling increased response times.
- Establishing a **robust monitoring and logging system** to provide insights into system performance, identify potential issues, and enable rapid resolution of problems.

## SOLUTION — Fast and automated deployment with modern methods

To address the customer's challenges, MHP employed a AWS DevOps solution. This enabled a flexible, scalable, and adaptable logistics control system that integrated with the existing SAP infrastructure and provided additional process support functions.

The MHP DevOps approach used AWS services such as AWS Lambda, Amazon API Gateway, Amazon S3 and Amazon SQS to create an architecture that provided seamless integration between the customer's SAP logistics system and their driverless transport system (FTS). This solution ensured a high degree of flexibility and independence, allowing the system to be easily scaled and adapted to accommodate changes in requirements and expansion across multiple locations.

### Key components of the solution include:

- **AWS Lambda** for business logic and interaction with the SAP logistics system
- **Amazon API Gateway** for seamless integration and communication between the frontend and backend systems
- **Amazon S3** for storing and managing the application's frontend
- **Amazon SQS** for decoupling of the various on-prem and AWS components

### Monitoring and Logging:

- **Amazon CloudWatch** was employed for logging, monitoring metrics, and setting alarms. This allowed the team to track application performance, identify potential issues, and receive notifications when predefined thresholds were crossed.
- **AWS X-Ray** was integrated into the Step Functions, enabling detailed monitoring and tracing of requests as they traveled through the system. This provided insights into the performance of individual components and helped identify bottlenecks or performance issues.
- **Custom dashboards** were created in Amazon CloudWatch to provide a consolidated view of system health, allowing stakeholders to quickly identify and address any issues.

## DevOps Best Practices:

- Infrastructure as Code (**IaC**) was implemented using AWS Cloud Development Kit (**CDK**). This enabled the team to manage infrastructure resources in a consistent, repeatable manner and ensured that changes to infrastructure were version-controlled, auditable, and reversible.
- Continuous Integration and Continuous Deployment (**CI/CD**) were employed to automate the process of building, testing, and deploying the application. This allowed for faster delivery of new features and reduced the risk of human error during deployment.
- The team used **AWS CodePipeline** (CodeCommit, CodeBuild and CodeDeploy) for version control and to manage the CI/CD pipeline. This facilitated seamless collaboration among multiple developers and enabled automatic deployment of new features and fixes.
- Regular **code reviews** and **automated testing** were employed to ensure the quality and reliability of the codebase. This helped identify and address potential issues early in the development process.
- Regular well architected framework reviews (**WAFR**) are conducted for the solution
- The DevOps team established a strong **feedback loop** with business stakeholders through weekly meetings, allowing for rapid prioritization and resolution of issues or new requirements. This close collaboration between development and operations enabled continuous improvement and increased the overall efficiency of the system.

By enhancing the MHPs AWS DevOps solution with comprehensive monitoring and adherence to DevOps best practices, MHP provided increased visibility into system performance and better equipped the customer to address issues and continuously improve their logistics control system. This ultimately resulted in a more efficient, reliable, and adaptable solution that met the evolving needs of the organization.

## OUTCOMES – An Adaptable and Scalable Logistics Control System

By utilizing MHP's AWS DevOps, the customer successfully developed an adaptable and scalable logistics control system that efficiently managed their logistics processes. The system could be launched in new markets or regions within a brief timeframe, ensuring the customer's continued growth and success.

### Key outcomes:

- **Rapid Development and Deployment:** The application was developed and deployed in a shorter timeframe, thanks to the use of Continuous Integration and Continuous Deployment (CI/CD) processes including Infrastructure as Code (IaC) and AWS Cloud Development Kit (CDK). This allowed the customer to quickly respond to new requirements and adapt the system as needed reducing the risk of human error.
- **Scalability and Adaptability:** The architecture and auto-scaling capabilities ensured that the system could easily scale up or down in response to fluctuations in demand. This made it easy to accommodate growth in user base, operations, or geographical coverage without compromising performance or incurring significant costs.
- **Seamless Integration with Legacy Systems:** The system was designed to interact with a variety of on-premises systems using multiple API technologies, allowing for smooth integration with existing processes and infrastructure.
- **Enhanced Monitoring and Logging:** The comprehensive monitoring and logging system, built using Amazon CloudWatch and AWS X-Ray, provided valuable insights into system performance, identified potential issues, and enabled rapid resolution of problems.
- **Improved Collaboration and Continuous Improvement:** By adopting a DevOps approach, the team was able to foster close collaboration between all stakeholders, including developers, architects, and the client's IT and business departments. This facilitated better communication, faster decision-making, and more efficient development processes. This ensured that the logistics control system remained up-to-date and aligned with the customer's evolving needs.

## ABOUT THE PARTNER - “ENABLING YOU TO SHAPE A BETTER TOMORROW”

Functioning as a technology and business partner, MHP digitalizes its customers’ processes and products, and guides them through IT transformations along their entire value-creation chain. MHP is a digitalization pioneer for the mobility and manufacturing sectors with expertise that can be transferred to a wide range of industries. MHP is a distinguished AWS partner, currently holding the Advanced tier status and offering Consulting as well as Software services to its customers. Additionally, MHP is a member of the APN Immersion Day program as well as AWS Well-Architected Partner and to date obtained 10 AWS Service Delivery Program Validations (SDPs), two of which MHP achieved as a launch partner.

MHP serves over 300 customers worldwide, including large corporations and innovative SMEs. MHP advises on both operational and strategic issues, offering proven IT and technology expertise as well as specific industry know-how. MHP operates internationally as OneTeam with headquarters in Germany and subsidiaries in the USA (since 2011), UK (since 2016), Romania (since 2014), and China (since 2013).

The MHP Group has been shaping the future alongside its customers for over 25 years. The MHP team of over 3,300 employees is united by the company’s promise of excellence and sustainable success. This promise continues to drive MHP – today, tomorrow, and in the future.

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