AUTOMOTIVE INDUSTRY

Automating Cloud Environments

anynines

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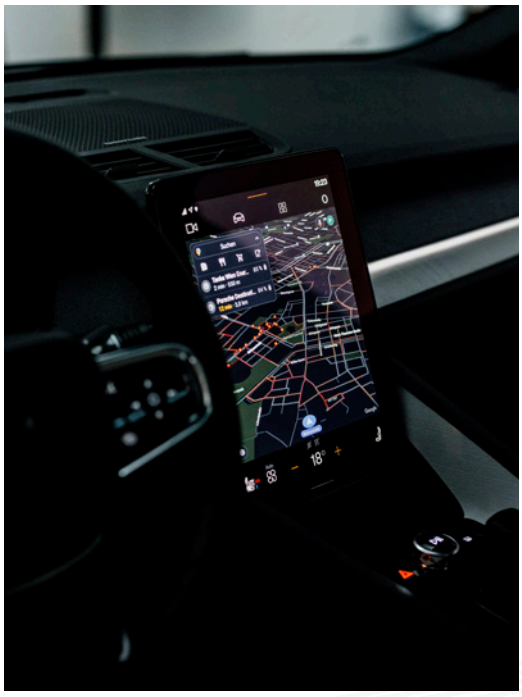
Executive Summary

The automotive industry is undergoing a profound transformation driven by four key trends: autonomous driving, connectivity, electrification, and shared mobility (ACES). These trends are reshaping the industry's technological landscape and creating new challenges and opportunities for cloud computing and automation. This white paper explores the evolving needs of the automotive sector in the ACES era, the limitations of traditional approaches to cloud management, and presents a9s Cloud Foundry as a comprehensive solution for streamlined cloud operations in automotive manufacturing.

Introduction

The automotive industry is at the cusp of a technological revolution. The ACES trends — autonomous driving, connectivity, electrification, and shared mobility — are fundamentally changing how vehicles are designed, manufactured, and used. These trends are driving unprecedented demand for advanced computing power, robust connectivity, and intelligent automation.

According to recent industry analyses by McKinsey & Company, the total value created by connected-car use cases could reach more than $550 billion by 2030, up from about $64 billion in 2020. This explosive growth underscores the critical importance of adopting flexible, scalable cloud solutions that can support the industry's rapidly evolving needs.



The ACES Challenge: Balancing Workloads Across Computing Resources

The ACES trends are creating new challenges for automotive manufacturers in terms of where and how to process the massive amounts of data generated by modern vehicles. Industry players now have three main choices for workload location:

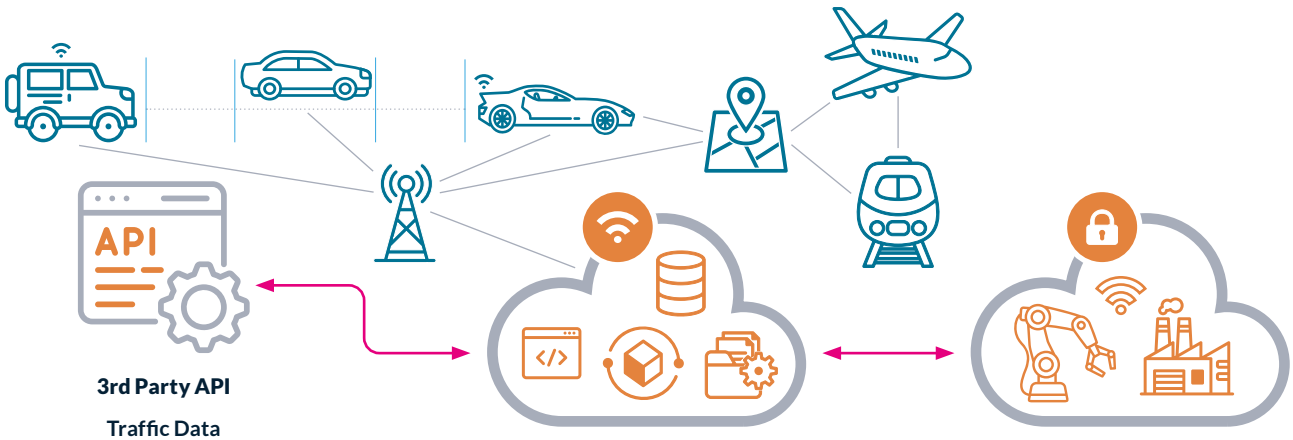
- Onboard the vehicle
- Cloud computing
- Edge computing

Each of these options has its strengths and limitations, and the optimal choice depends on several factors:

- Safety requirements
- Latency constraints
- Computing complexity
- Data transfer requirements

For instance, safety-critical functions like autonomous emergency braking systems (AEBS) currently require onboard processing due to their need for extremely low latency. On the other hand, functions like navigation systems and over-the-air (OTA) updates can tolerate higher latency and may benefit from cloud processing.

Modern cloud environments often encompass a multitude of services, applications, and data stores spread across various platforms and locations. This complexity introduces several challenges: efficiently allocating and scaling resources, maintaining uniform configurations across different environments, ensuring robust security measures and adherence to industry regulations, and continuously monitoring and fine-tuning system performance to meet business needs.



3rd Party API

Traffic Data
(Vehicles, Accidents, Traffic)

Surveillance Data
(Buildings, People, Distances)

Mobility Services
(Fleet Management, Charging Stations, Parking Lots, etc.)

Public Cloud
Supply Chain Optimization
Customer Experience
Connected Cars
Data-driven Engineering
Cross-cutting Business
(Mobility, Car Sharing, Insurance)

On Premise
Smart Factories
Manufacturing
Logistics
Quality Assurance
Predictive Maintenance
Cybersecurity