IT contributes to automotive sustainability targets

Capgemini modernizes a premium automotive manufacturer's application landscape to accelerate its transition to a CO_2 neutral enterprise

Sustainability is a key element of the premium automotive manufacturer's corporate strategy across all business areas. The company has extensively pursued emission-free mobility solutions, simultaneously attempting to reduce its operational impact on the environment. In 2019, the premium automotive manufacturer announced its overarching goal of becoming a CO_2 neutral enterprise by 2039. Midterm goals include CO_2-neutral production in all plants by the end of 2022 and utilizing electric or plug-in hybrid models for over 50% of vehicles sold in 2030.

As a key supplier for the premium automotive brand, Capgemini was able to identify the IT landscape, where widespread digitalization has raised CO_2 emissions in recent years, as an area for potential sustainability gains. This was based on the fact that today, the share of IT in worldwide CO_2 emissions equates to approximately half of the share of vehicles and continues to rise (Source: The Shift Project). The datacenters and applications of large enterprises also leave a sizeable CO_2 footprint, meaning that application modernization can contribute to reducing energy consumption.

Overview

Customer Name: Mercedes-Benz AG

Industry: Automotive

Location: Global

Client Challenge:

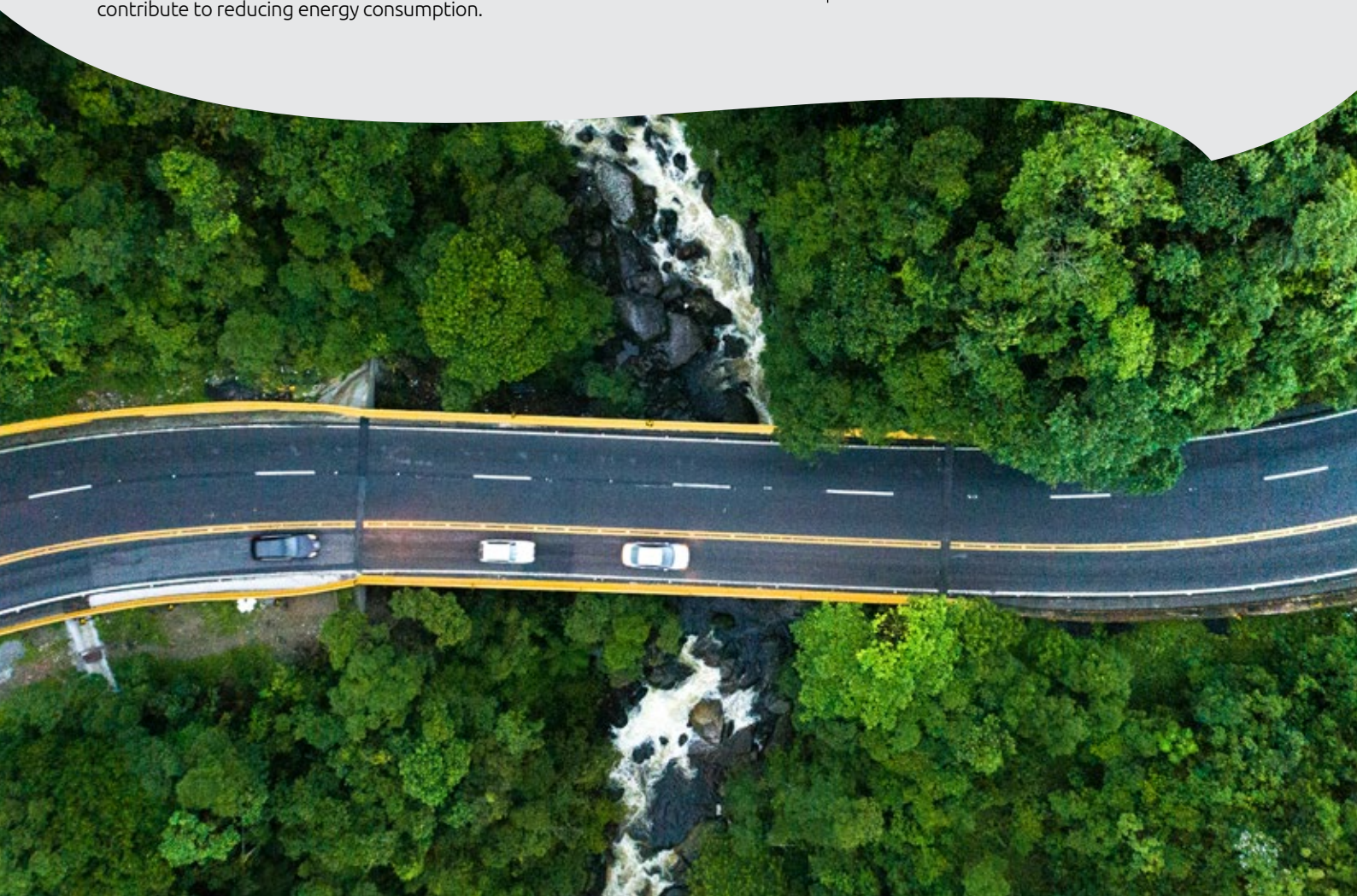
Fulfilling the sustainability strategy's key goals of providing CO_2 neutral mobility and becoming a CO_2 neutral enterprise.

Solution at a glance:

Capgemini modernized a widely used backend service for vehicle master data and buildability services. Several deployments were consolidated into a central shared service to minimize the CO_2 footprint.

Results (Benefits):

- Proof that IT can also significantly contribute to corporate sustainability targets
- CO_2 reduction of approximately 50%
- Reduced energy consumption, hardware, and operational efforts
- Deployment on the public cloud enables even further energy savings



Modern technology and APIs streamline operations

Capgemini, together with the client's Sales and IT teams, focused on the following aspects to modernize and consolidate the backend service:

- Providing an application programming interface (API) that is used by all frontend applications
- Consolidating several deployments of the application on dedicated servers into one central, shared service on a container platform. The reduction of hardware is significant, as each deployment has development, integration, and production stages
- Implementing a modern microservice architecture, container technology, and advanced technical features such as green/blue deployments for better utilization of platform hardware
- Introducing detailed monitoring on the container platform that allows for effective capacity management and reduced spare capacity in server hardware.

Following the optimization, Capgemini calculated the difference in energy consumption for the previous dedicated environments and the new container platform. Every web, application, and database server in each stage was considered (development, integration, and production). In addition, Capgemini assumed that the utilization of development and integration stages as well as inactive production environments was 50% compared to active production environments.

The energy consumption was calculated based on the Central Processing Unit (CPU) cores, then multiplied by 2 to determine the whole server energy consumption. For all Linux servers, the same CPU type was used to eliminate variances caused by comparing different hardware models.

The energy consumption of the mainframe deployments was calculated based on the CPU minutes captured in the mainframe performance management and converted into energy consumption using the million instructions per second (MIPS) factor of the processor cores. To consider the data center overhead in energy consumption, a Power Usage Efficiency (PUE) factor of 1.5 was applied.

> *Modern technology, APIs, and a shared services approach enabled us to reduce operational platforms and save energy in order to support our client's corporate sustainability goals.*
>
> *By using the public cloud we have realized even higher energy savings and CO_2 reduction."*
>
> **Dr. Stefan Fütterling,**
> Account Chief Architect, Capgemini

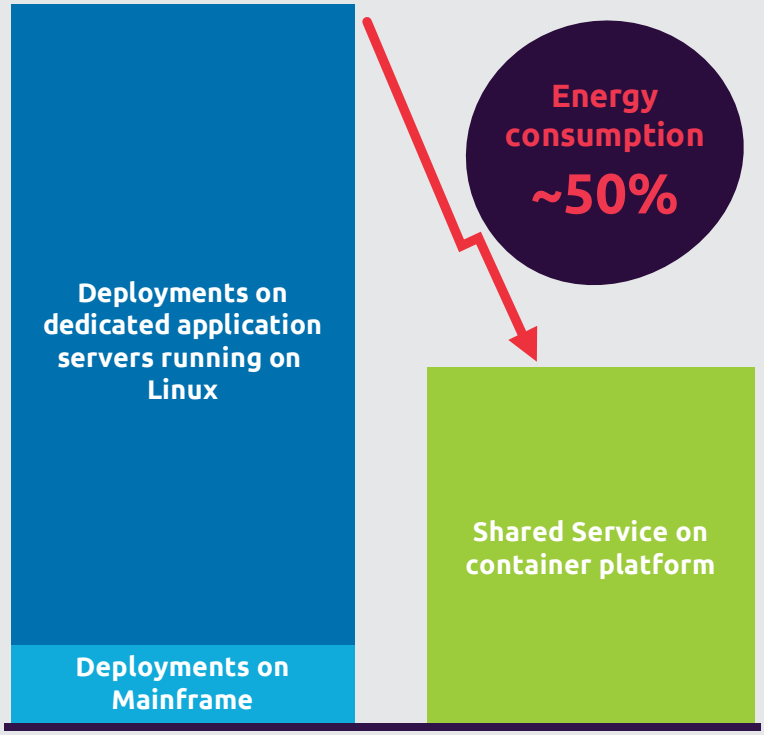
Savings in energy, CO_2 emissions and costs

The overall energy savings calculated go far beyond initial estimations, resulting in a reduction of almost 50% per year. The graphic shows the energy consumption before and after the application modernization was completed. As energy consumption and CO_2 emissions scale proportionally, this means that CO_2 emissions were also reduced by approximately 50%.

In this project, Capgemini was able to prove that application modernization offers more than enhancing flexibility, scalability, and availability. In addition to a reduction in energy, Capgemini could also deliver significant cost savings as the new shared service requires less computing hardware and operational efforts.

The project only considers one application out of hundreds that currently operate in the data centers of large companies. It highlights the huge potential for further energy optimization in the IT industry.

As a chosen key supplier, Capgemini continues to focus on leveraging these opportunities for greener IT and thus supporting sustainability in the automotive sector.



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About the client

The client is one of the biggest producers of premium cars with a global reach. It provides financing, leasing, fleet management, insurance and innovative mobility services.

For more information on this project, please contact:
references.ce@capgemini.com