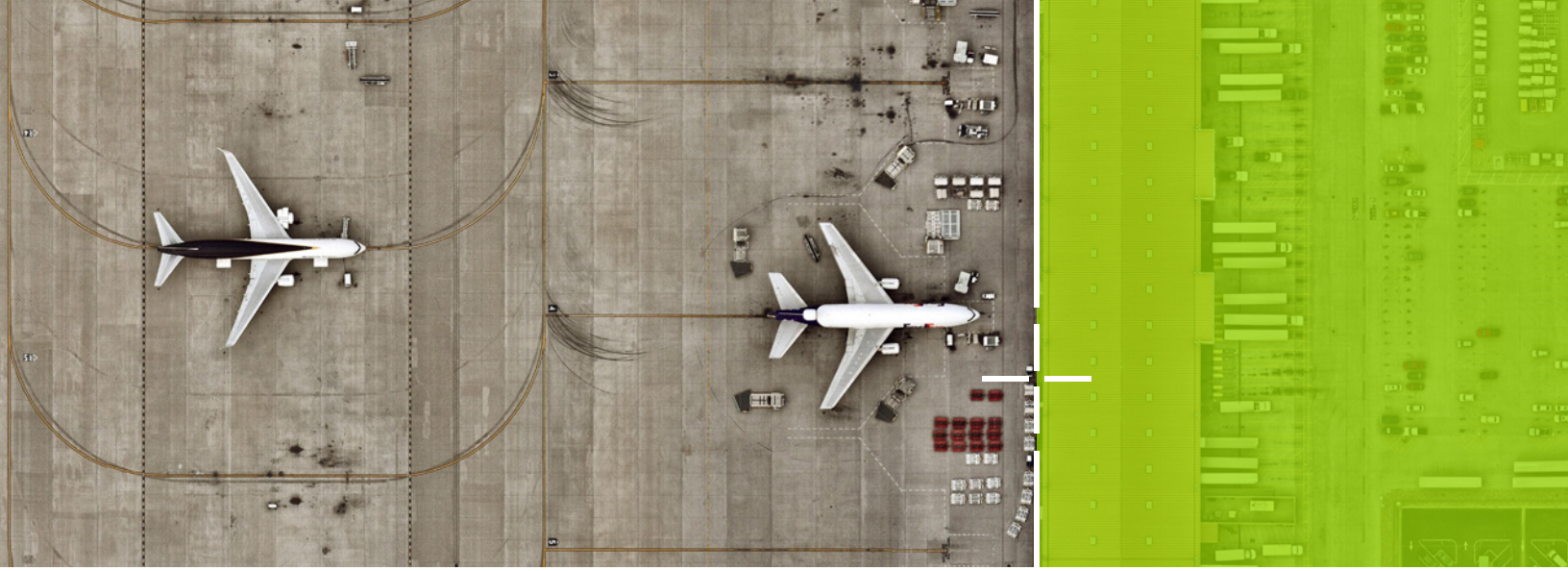

SOLUTION BRIEF

Amadeus Cloud Migration on Microsoft Azure Ampere Altra Arm Instances

AMPERE.

ARM IP

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OVERVIEW & GOAL

Amadeus is a leading global Travel IT company, powering the activities of many companies in the travel industry. One activity is to provide shopping services to search and price flights for travel agencies and companies like Kayak and Expedia. Searching for suitable flights with available seats among many airlines is surprisingly difficult. Providing the right level of performance for the shopping application requires a large-scale distributed system and consumes a lot of CPU.

"You might not be familiar with Amadeus, because it is a B2B company [...but] when you search for a flight or a hotel on the internet, there is a good chance that you are using an Amadeus-powered service behind the scenes," according to Didier Spezia, a cloud architect for Amadeus.

A few years ago, Amadeus began a large, multiyear project to migrate most of Amadeus' on-prem resources to Azure. Amadeus worked jointly with Microsoft to validate Ampere Altra Arm-based virtual machines (VMs).

APPLICATION AREA

- Artificial Intelligence
- Server and Infrastructure
- Sustainability

CHALLENGE

As part of the transition, moving to a new architecture was not a primary goal for Amadeus. According to Spezia: "We only introduce a different architecture because we expect some benefit. We are very interested in the performance/price ratio we can get from Ampere. We want the capability to mix machines with traditional x86 CPUs and machines with Ampere CPUs and run workloads on the best-suited CPUs." Amadeus chose a large, distributed, compute-intensive C++ application as the first one to run on Ampere and Arm64.

"Porting our code started by recompiling everything using an Arm64 compatible toolchain (Aarch64 target), with implications on our CI/CD." The porting process went smoothly, although some issues were revealed. "We appreciated the flexibility to deploy some machines on-prem, with the same CPU architecture as the VM delivered in Azure by Microsoft," said Spezia.

SOLUTION & BENEFITS

Amadeus was not interested in migrating its entire application infrastructure to Arm64. Red Hat has delivered the ability to run a single OpenShift cluster with both x86 and Arm compute nodes as a supported feature. Some components of the Amadeus application infrastructure can therefore run on traditional x86 VMs, while the application pods that Amadeus decides to run for cost and performance reasons on Arm64 can run on Azure Dps v5 VMs powered by Ampere Altra CPUs.

When running a benchmark that modelled real application behavior, there was a trade-off between throughput and response time. The higher the throughput, the great impact on response time. The Ampere Altra VMs yielded a 47% performance/price improvement, with an acceptable degradation of 11% in mean response time over Intel VMs, and 37% performance/price with a 9% degradation in average response time over AMD.

Based on these favorable results, Amadeus has begun ramping up the production deployment of its shopping application in multiple Azure regions.

LINKS TO FURTHER RESOURCES

Built for sustainable cloud computing, Ampere's first cloud-native processors deliver predictable high performance, platform scalability, and power efficiency unprecedented in the industry. We invite you to learn more about our developer efforts, find best practices and insights, and join the conversation at:

- developer.amperecomputing.com
- community.amperecomputing.com