Azure Kubernetes Service (AKS): Case Study

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Azure Kubernetes Service

What is Azure?

Microsoft Azure, commonly known as Azure is a cloud computing service created by Microsoft for building, testing, deploying, and managing applications and services through Microsoft-managed data centers. It provides software as a service(SaaS), platform as a service(PaaS), and infrastructure as a service(IaaS) and supports many different, programming languages tools, and frameworks, including both Microsoft-specific and third-party software and systems. Azure is the largest commercial cloud vendor by revenue with more regions.

What is Kubernetes?

Deploy and manage containerized applications more easily with a fully-managed Kubernetes service. Azure Kubernetes Service (AKS) offers serverless Kubernetes, an integrated continuous integration and continuous delivery (CI/CD) experience, and enterprise-grade security and governance. Unite your development and operations teams on a single platform to rapidly build, deliver and scale applications with confidence.

What is Azure Kubernetes Service (AKS)?

Microsoft Azure is one of the foremost players in the cloud computing market presently. We also have Kubernetes as the top instrument for the management of application containers.

Kubernetes *helps in reducing the cost of cloud computing investments alongside simplifying architecture and operations. Therefore, Azure Kubernetes Service combines the functionalities of Kubernetes and Microsoft Azure for better outcomes in application development.*

Basics of Azure Kubernetes Services:

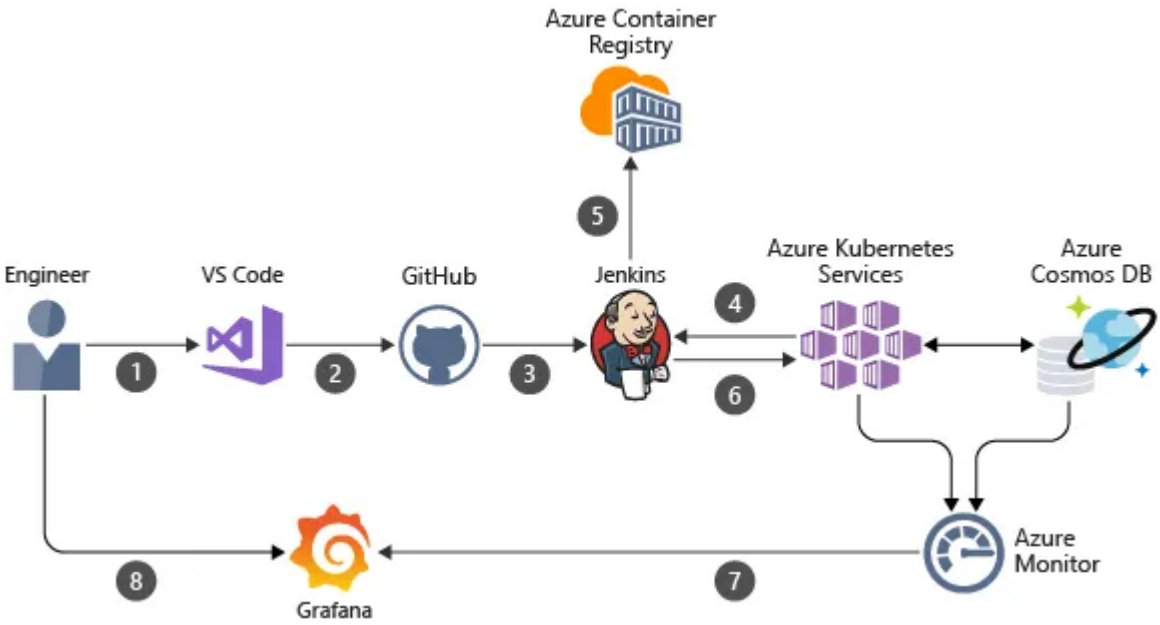
Azure Kubernetes Service (AKS) is a fully-managed service that allows you to run Kubernetes in Azure without having to manage your own Kubernetes clusters. Azure manages all the complex parts of running Kubernetes, and you can focus on your

- *Easier cluster upgrades*
- *Integrated with various Azure and OSS tools and services*
- *Kubernetes RBAC and Azure Active Directory Integration*
- *Enforce rules defined in Azure Policy across multiple clusters*
- *Kubernetes can scale your Nodes using cluster autoscale*

- *Expand your scale even greater by scheduling your containers on Azure Container Instances*

Working of AKS

The engineer will write a code and push it into GitHub then launch AKS and connects to Jenkins now no need to monitor our code to push, download and Deploy our code every steps monitored by **Azure Monitor.**



Case Studies of few companies

BOSCH

BOSCH is increasing vehicle safety by using map-matching algorithms on AKS(Azure Kubernetes Services)

> When we started our journey on Azure, we were a really small team — just one or two developers. Our partnership with Microsoft, the support from their advisory teams, the great AKS documentation and enterprise expertise — it all helped us very much to succeed.
>
> -Bernhard Rode: software engineer Bosch

Bosch has partnered closely with the **world's automakers for decades**. The company continues to develop **networked safety and assistance systems** that **support drivers today and pave the way for fully automated driving.**

When Robert Bosch GmbH set out to solve the problem of drivers going the wrong way on highways, the goal was to save lives. Other services like this existed in Germany, but precision and speed cannot be compromised. Could Bosch get precise enough location data — in real-time — to do this? The company knew it had to try.

The result is the wrong-way driver warning (WDW) service and software development kit (SDK). Designed for use by app developers and original equipment manufacturers (OEMs), the architecture pivots on an innovative map-matching algorithm and the scalability of Microsoft Azure Kubernetes Service (AKS) in tandem with Azure HDInsight tools that integrate with the Apache Kafka streaming platform.

Let's have a look at how BOSCH implemented AKS on their vehicles, above picture shows the benefits of cloud AKS services

FINASTRA

Finastra is one of the largest fintech companies in the world, offering the broadest portfolio of solutions for financial institutions of all sizes. Launched to public cloud in June 2018.

> “ Our platform intersects a great deal of data and technology, yet our complete integration with Azure streamlines our infrastructure, simplifies our processes and makes our lives infinitely easier. ”
>
> — Felix Grevy: Global Head of Product Management

Kubernetes is at the heart of the FusionFabric.cloud platform, allowing the Orchestration of Docker containers . Fintech applications can run and scale with ease on Azure Kubernetes Service, the next generation service that builds on the Azure Container Service Engine . Currently on an ACS-engine , Finastra plans to migrate to AKS. AKS brings a fundamental benefit to the development team at Finastra, as Grevy explains, “ AKS gives us a pure kubernetes and Docker imaging environment that we don’t have to manage ourselves. Our team has regained the resources to accelerate deployment and maximize our PaaS offering.”

Hafslund

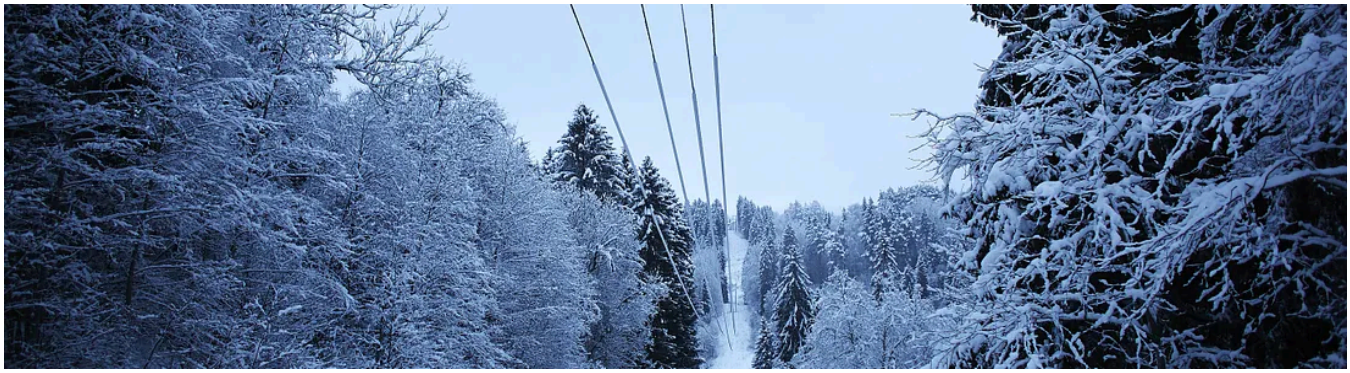
Hafslund ASA is listed on the Oslo Stock Exchange and one of the largest listed power groups in the Nordic region. Hafslund is a pure-play energy and infrastructure company with a leading position as Norway’s largest network, district heating, and power sales company, and is a medium-sized power producer. The

regulated networks business accounts for around half of Hafslund's capital employed. Networks secure Hafslund stable and predictable returns in a period of low power prices.

> We wanted a platform to speed development and testing but do it safely, without losing control over security and performance. That's why Azure and AKS are the perfect fit for us.
>
> - Ståle Heitmann: Chief Technology Officer
>
> - Hafslund Nett

Hafslund ASA was listed on Oslo Børs (Oslo Stock Exchange) until August 4, 2017, and was one of the largest listed power companies in the Nordic region. Oslo municipality, with a stake of 53.73 percent, was the largest owner when the company was taken out of the stock exchange.

Hafslund Nett (Hafslund) — the power grid operator that serves 1.5 million Norwegians — determined that legacy systems for reading meter data needed higher capacity and that externally developed software was difficult to manage. To address the issue, Hafslund chose to develop its own meter-system software, using Microsoft Azure as its cloud platform, Azure Kubernetes Service (AKS) to manage software containers, and Azure Monitor for containers to optimize container performance. Hafslund IT staff will soon save time managing their improved systems, and customers will benefit from higher reliability.



The government of Norway wants to encourage nationwide community smart projects (sometimes called smart cities in other countries) that use technology to better manage government and utility services. The smart-meter project is a government directive to promote that policy. However, to realize this vision on a large scale, Hafslund needed to address several IT issues.

“The biggest problem has been how difficult and expensive it is to get our legacy system’s provider to implement needed enhancements and repairs in a timely fashion,” says Heitmann. “We decided to build our own software for processing meter data. It works better, and we can continually update it as our business evolves.”

Also, the legacy system barely has the capacity to process the large volume of IoT data coming in from the few smart meters deployed so far. “It is at its limit. We could be vulnerable to outages and delays,” Heitmann says. “Hafslund has the stated goal to grow by acquiring neighboring utilities, so we need the ability to scale to handle the increased loads.”Siemens Healthineers

Siemens Healthineers is leading the digitalization of healthcare with its Digital Ecosystem, which helps health providers and solution developers bring more value to the delivery of care, ultimately improving the quality of insights derived from healthcare data. Siemens Healthineers uses Microsoft Azure to make solutions more accessible, and it uses Azure Kubernetes Service (AKS) and other tools for a fast, efficient, and competitive development pipeline.

Their purpose is to enable healthcare providers to increase value by empowering them on their journey towards expanding precision medicine, transforming care delivery, and improving patient experience, all enabled by digitalizing healthcare.

Siemens Healthineers has already moved lots of their computing to the cloud to support value-based care development.

As reported by Microsoft, *The Siemens Healthineers Digital Ecosystem is a platform where healthcare providers, payers, and software and services developers in the healthcare domain can come together to collaborate, gain insights from their data, and improve their core business areas.*

Wind River

Wind River Cloud Platform combines a full cloud-native, Kubernetes, and container-based architecture with the ability to manage a physically and geographically separated infrastructure for vRAN and core data center sites.

Reducing service providers' operational burden and costs, the platform delivers single-pane-of-glass, zero-touch automated management of thousands of nodes. Cloud Platform is a commercially supported version of StarlingX and lends itself to demanding 5G use cases applicable across mission-critical industries.

WIND RIVER

Wind River has been a long-standing contributor to open source projects. We are excited to have Wind River as a member of CNCF and we look forward to their contributions and collaboration to drive container technology to the edge," said Dan Kohn, executive director of Cloud Native Computing Foundation. "With Wind River Cloud Platform, Wind River is helping to further advance technologies such as Kubernetes at the edge."

Wind River has for decades provided a backbone for global telecommunications infrastructure, with offerings used by all top telecommunications equipment manufacturers (TEMs).

The company is a leader in the early 5G landscape, powering the majority of 5G RAN deployments. Now with Cloud Platform, Wind River can deliver, directly to service providers, one of the industry's most advanced cloud-native distributed infrastructure solutions for 5G vRAN network deployment.

Cloud Platform is a commercial implementation of the StarlingX open source project. StarlingX is a container-based cloud infrastructure software stack for edge

implementations that demand ultra-low latency.

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