Embracing the benefits of hybrid cloud

SKM Informatik GmbH migrates its AI and application workloads to OpenShift on Power, using it as the base for all its DevOps processes.

↓

Explains the benefits of Red Hat OpenShift running on IBM Power Virtual Server through an innovative client story, addressing relevant technology trends, and offering lived experience.

Embracing the benefits of hybrid cloud, SKM sought to create a reference AI platform for sound analytics on top of a modern hardware and software stack. SKM was looking to prove the feasibility of the AI platform while conducting sound analytics in differing customer scenarios. One scenario entailed the predictive maintenance of ship engines through the inspection of sounds emitted from an engine. The other elicited the quality inspection of bottles filled and sealed with crown corks, listening to the vibration and sound of the crown cork itself.

Over several workshops and joint co-creation sessions, the engineers and data scientists at SKM Informatik, around lead architect Michael Hermelschmidt and IBM architects, created the complete envisioned reference AI platform based on open source technologies and deployed the platform to IBM Cloud with Red Hat technology.

> "We penetration-tested our deployment for 1.5h with a 95% core utilization. We observed 0 issues."

Michael Hermelschmidt
Lead Architect for DevOps & AI, SKM Informatik

The platform's early success prompted SKM to expand the project's scope, testing the application with other customers by incorporating it into a research project with several industry partners. With the support of .NET 7 for IBM Power and Red Hat OpenShift, SKM could now migrate its .NET workloads from Azure to the newly implemented AI platform. Expanding the project scope again, IBM guided the expansion of the AI platform to incorporate SKM's applications, spanning across multiple areas of the business.

Efficiency for AI and container workloads, advanced security, and reliability made IBM Power the optimal deployment target for Kubeflow. For example, SKM observed that IBM Power cores could reliably cope with more containers per core compared to their x86 environment – a clear sign of improved efficiency.

Using Kubeflow to automate the end-to-end machine learning process, SKM outsourced model training by bursting to an external Kubernetes cluster with GPUs. At the same time, the rest of the automation operated on the local Red Hat OpenShift based cluster on IBM Cloud's Power Virtual Servers. This hybrid approach combined SKM's GPU workloads outsourced to x86 with a co-optimized model management and operation on IBM Power servers with in-core acceleration for model usage. The IBM engineered feature, known as train-bursting, permitted SKM to switch from IBM Power to x86 and back seamlessly, echoing a hybrid cloud operation model.

> "I am still completely impressed by the train-bursting feature of IBM's Kubeflow distribution. I can't wait to apply it on further use cases."

Michael Hermelschmidt
Lead Architect for DevOps & AI, SKM Informatik

Red Hat OpenShift delivered the consistent operating foundation for modern IT and enterprise hybrid cloud deployments by enabling SKM to deploy and run its applications anywhere, from physical to virtual, private, and public clouds. As a performance-driven, cost-effective platform, Red Hat OpenShift provided a scalable foundation for MariaDB, the fully managed MySQL relational database deployed and scaled effortlessly to drive innovation even further. Combined with MinIO for object storage on OpenShift, SKM was able to cover its wide range of use cases when it comes to managing data for their containerized applications and AI workloads. Finally, SKM secured its solution by integrating Keycloak for identity and access management and by operating it on the OpenShift cluster.

This innovative, modern, and price-efficient solution based on Kubeflow has enabled SKM to completely migrate its AI and application workloads to OpenShift on Power, now using it as the base for all its DevOps processes. Committed to IBM hardware, SKM has provided a blueprint for .NET 7 running natively on Red Hat OpenShift on IBM Power Virtual Server. Additionally, the inherent benefits of the flexible IBM train-bursting feature shine through SKMs experience. Compared to prior experiences deploying on Microsoft Azure, SKM now benefits from a highly functional and reliable solution at a lower cost.

"Indeed, we felt a significant relief in our DevOps and MLOps processes. We estimate that CI/CD and AI pipelines of OpenShift and IBM's Kubeflow distribution now save us 2h of effort every day."

Michael Hermelschmidt
Lead Architect for DevOps & AI, SKM Informatik

A webinar was conducted showcasing how IBM enabled existing .NET apps to be consolidated to run on Red Hat OpenShift on Power alongside AIX and IBM i applications on the same Power platform. Watch the replay.

To learn more about Kubeflow on Power and the train-bursting, check out the following blogs on the IBM Power Developer eXchange.

– MLOps with Kubeflow on IBM Power
– True Hybrid Cloud for ML – Or: How I can burst my training to x86 & deploy back to Power

SKM Informatik GmbH is an IT system house based out of Germany with 40 specialists that support companies worldwide with the introduction and use of IT/CAD/CAM/CAE technologies. SKM goes far beyond the delivery of hardware and software. SKM works to jointly develop and maintain the technology that comprises a company's digital framework for years to come. Partnering with IBM, SKM Informatik has supplied and serviced a wide variety of IBM technology for its customers.