Galliker moves .NET applications to a modern DevOps platform

Technology is critical for the smooth running of Galliker Transport AG's (Galliker) transportation and logistics business. From moving and storing goods to value added services on cars, everyone—from its engineers to its drivers and cleaners—relies on applications provided by its IT department. When Galliker decided to containerize its existing in-house developed .NET-based apps, the company approached Red Hat® partner Axians Amanox AG (Amanox) for help.

Amanox has made a name for itself in realizing efficient solutions using cloud-native technologies and developing cutting-edge applications. Red Hat helped Axians Amanox explore different approaches. Together, they decided that running the apps in Linux containers on Red Hat OpenShift® was the optimal approach. Red Hat OpenShift, in combination with GitOps, ensures build environments can be set up automatically at the click of a button, updates can be applied without downtime, and builds can be reproduced for a stronger security posture.

Question: Tell us about the vital role of technology at Galliker, today and in the future.

Patrick Forrer, Software Engineer, Galliker: We're a logistics and transport company with over 1,000 trucks running in and beyond Switzerland and several logistics centers where we store items for our customers. We also provide car logistics. We transport cars for our customers and provide value added services, from cleaning them to maintenance and upgrade jobs. No matter what job needs to be done, there is always software involved. These days, from getting the order of our customers, while tracking the vehicle throughout its process, to delivering it to its destination, many different software components are involved.

Question: Why did Galliker decide to modernize its application environment?

Ashutosh Tamhankar, Cloud Engineer, Amanox: Galliker's developers were asking for a more modern platform for developing applications. So, Galliker took a step toward modernizing the environment and allowing developers to adopt containers for their new application development.

Forrer: All our applications are written in C# .Net Core. We traditionally ran them on Microsoft Internet Information Services (IIS) hosted on Microsoft Windows in the Nutanix Acropolis Hypervisor. There were no containerized applications. Manual deployment processes needed two people to configure the IIS application pools. So, when we started a new greenfield project, that felt like a good moment to look at modernizing our infrastructure and containerizing our applications.

Our goal was to ensure the DevOps engineers here in Switzerland were independent of the new offshore development teams. We wanted them to be able to set up a new environment and hand over the namespace for the developers to use in their own way.

Question: Tell us about how and why you chose Red Hat OpenShift.

Forrer: As Windows authentication is not supported in a Linux environment, our options were to run our applications in Windows containers on Windows worker nodes or rewrite our authentication. We then turned to Amanox for help.

Tamhankar: Galliker came to us, looking for a container orchestration platform for running applications using windows-based containers. It had looked at using the Nutanix Kubernetes Engine (NKE), but you can't run Windows containers on that platform, and so was exploring options for running Windows containers on Windows worker nodes in Red Hat OpenShift. However, running Windows containers on Windows worker nodes has many limitations, so we decided to install an OpenShift cluster for running Linux-based containers instead.

We looked at vanilla Kubernetes, but you have to install and manage many open source tools. You don't have that complexity with OpenShift. OpenShift gives you all the functionality from the open source world, and you also get support and lots of operators, making operations much simpler to maintain various platform services like argocd or tekton pipelines.

Moreover, Red Hat's support and the security of the architecture increase safety. Red Hat's strategic alliance with Nutanix was also important. We have a strong partnership with Nutanix here in Switzerland (Nutanix Cloud Champion) and Galliker has invested a lot in Nutanix technology; its virtual machines (VMs) run on the Nutanix Acropolis Hypervisor and where also the Red Hat OpenShift clusters run.

Question: How did the migration go?

Forrer: We switched from Windows authentication to API key-based authentication for service-to-service communication and to Azure Active Directory (now Microsoft Entra ID) for user workloads so we can use an authentication approach based on JWT (JSON Web Tokens). Switching to the new environment was then pretty easy.

We're mainly running new applications in the new environment. The latest project replaces the backend of the company, a big part of the ERP system. It's at least a 2-year process until the first MVP is running, and then it will take several more years for optimizing. It's huge.

We're also running a few of our legacy applications in the new environment; the remaining applications will be migrated one by one whenever we have a reason to migrate them.

Question: Is GitOps part of your modernization journey?

Forrer: Absolutely. We were already storing our source code to build the servers for our IIS infrastructure in Git. Before, you could run a command on the command line to build a project and push it to IIS. But this meant nobody else knew exactly what you had done. And you always needed an administrator to create the node pool for you, which meant an administrative overhead.

Now, anything running on the cluster is represented in our Git server. Whenever you want to deploy something new, you instruct our infrastructure repository to deploy a new environment based on a specific image. We then use the OpenShift-GitOps Operator to deploy an instance.

OpenShift helps us keep our clusters secure by allowing us to lock down the Git repository and ensure only requests pulled from the repository are applied to the clusters. Moreover, nobody needs administrative access to the OpenShift cluster to create new environments or deployments.

Tamhankar: GitOps allows you to build an internal environment and reproduce it at the customer site. It has also allowed us to deliver an automated way for developers to onboard their new applications and integrate them with Microsoft Active Directory and role-based access control (RBAC) where users can log into OpenShift and only access what they're supposed to. The onboarding process creates namespaces for the application teams, enforcing resource utilization limits and integrating with their internal secrets management tool via the ExternalSecrets operator. Moreover, the application teams are empowered to design and manage their own CI/CD (Continuous Integration/Continous Deployment) pipelines, giving them greater control and flexibility.

Question: How did Red Hat support you?

Tamhankar: During the pre-sales process, the Red Hat team ran workshops to help us evaluate the different options we had for Windows containers. How do we run Windows-based worker nodes? How do we do monitoring?

Thanks to the expertise of the Red Hat account team—in particular, the coordination, technical expertise, and support provided by the Red Hat Solution Architects during these sessions – we were able to consult a great deal of documentation they had prepared to help us check the compatibility of the solution's technical requirements.

We also referred to the Red Hat blogs before deciding to use GitOps for Day 2 operations from when the first cluster was installed: it's the industry best practice for configuring the cluster. We then designed the platform and a process for configuring it using GitOps, and Red Hat was there for us when we had questions. Our partnership with Red Hat gave us the confidence to successfully introduce OpenShift, a modern enterprise application platform, at Galliker.

Question: What benefits have you seen?

Forrer: We have two development teams in Switzerland working in the existing environment; all offshore teams are working in the new environment. If the offshore team was working in the existing environment, we would need 2 people generating application pools in IIS and doing other administrative work. In today's environment, it takes at least half a day to set up all of the environments a team needs.

With OpenShift, it takes just an hour. I create a simple YAML file to say what I want each application team to have access to and commit that. They can then independently start developing their applications and running their CI/CD pipelines. It's also reproducible so if something were to happen and we needed a new cluster, it's a simple click and everything will be back. In the old environment, it was all manual steps, and there was always a risk something would be configured wrongly.

Tamhankar: The developers are using modern development methodologies to develop the application and run it in the cluster. Operations have visibility over all the applications: how many pipelines there are, how successful they have been, and how long they took to complete. We have CI/CD pipelines for about 10 new application components running already on the cluster.

Forrer: We also have zero downtime for upgrades and deployments. Our internal applications are not load-balanced. Previously, whenever we had a new deployment, we would shut down the application, copy over to the new deployment files, and then start it again, which meant 2 minutes of downtime. Now, we have zero downtime because we can scale out the containers and replace them with new deployments one by one.

Question: What's next for Amanox and Galliker?

Tamhankar: Now we've installed the platform, our focus is on strengthening security. We want to help Galliker's development teams to deliver new software faster in a secure way and so we're exploring how to shift security left in the DevOps process.

We have planned a comprehensive security workshop planned at Galliker to introduce a toolset for their developers including Red Hat Advanced Cluster Security for Kubernetes (RHACS) and adopt DevSecOps practices. Additionally, Observability and alerting is also on our agenda because it sits hand in hand with security: on the one hand, monitoring the cluster and, on the other, providing the developers with actionable metrics. Moving forward, we remain committed to strengthening Galliker's DevOps processes to support their ongoing transformation.

Forrer: Galliker is working on the technology for a major new use case that we expect to go live in 2 years. Our goal is to have all the latest software running by then. This new project is based on the new microservice architecture we've discussed today.

About Galliker Transport AG (Galliker)

Since its foundation in 1918, Galliker has continuously built up and developed its company together with its employees. The small 'haulage company' in Hofstatt has grown into a logistics company operating throughout Europe with 19 locations in 6 countries and its headquarters in Altishofen, Lucerne. Galliker is still 100% family-owned today. Financial independence allows the traditional company to invest independently in the future of the company.

About Axians Amanox AG (Amanox)

Axians Amanox, established in 2011, is a pioneering IT solutions provider specializing in tailored cloud services. From consulting to implementation and operational support, it offers comprehensive expertise in hybrid cloud platform and infrastructure as well as cloud native app development and operations. Leveraging cutting-edge technologies such as Red Hat OpenShift and Red Hat Ansible Automation Platform, its enterprise cloud solutions ensure best performance, security, and scalability, backed by a team of 30+ professionals. As part of Axians, it serves a diverse clientele, fostering seamless transitions to the cloud.

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