SVA helps STRATEC expand its Windows build thanks to containers

STRATEC has three decades of experience in highly regulated healthcare markets. It designs and manufactures fully automated analyzer systems for its partners in the fields of clinical diagnostics and life sciences. The partners have installed a high number of these systems globally, which are in use around the clock, performing several million tests every day. Software updates for these systems are bundled in releases and are delivered to customers by field service engineers via USB Stick. To meet compliance requirements, STRATEC must be able to rebuild software with bit accuracy for the whole system product lifecycle. IT Architects and System Engineers from SVA (SVA System Vertrieb Alexander GmbH) accepted the challenge of redesigning STRATEC's software build factory. Red Hat® OpenShift® ensures an efficient and automated build process for .NET software development. Replacing virtual machines with containers means developers are no longer limited to 1 parallel build per project. Moreover, Red Hat OpenShift ensures build environments can be set up in hours rather than days, updates can be applied more efficiently, and reproducing builds is no longer a challenge.

Question: What unique challenges does STRATEC face?

Kenny Retzlaff, Software Engineer at STRATEC: We operate in healthcare markets, and because of the strict regulations, our update procedure must follow various rules and guidelines that limit regular Windows updates on these systems. Our devices are offline to limit the impact of this.

Our software is mainly written in .NET with some C++. Our build environment has to support both old and new Windows operating systems in parallel. Previously, we had many virtual machines running the various operating systems for our builds. Our virtual machines must be kept current because they are connected to the network. However, updating them risked breaking the compatibility with older software versions and operating systems.

Sebastian Zoll, Professional Services Team Leader at SVA: Added to that, regulatory requirements mean STRATEC needs to be able to reproduce builds for quite some time. That's hard with the virtual machines in the build environment because you must install updates frequently. After all, they are connected to the internet. And that means you don't have reproducible environments; you have drift.

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

Retzlaff: We were looking into how we can make that better. How do we fix the problems I've just described? We figured that we should use containers because moving our Windows build shops in containers would allow us to run builds for multiple different versions of Windows in parallel.

We initially looked at the Community Distribution of Kubernetes that powers Red Hat OpenShift (OKD), then contacted our technology partner SVA. SVA had already had great success running software build environments in containers and was looking into how to scale that.

SVA introduced us to Red Hat OpenShift and described how it might help us in our unique environment. We explored how OpenShift could help us deal with the challenges we faced and how it would provide us with a managed environment.

Zoll: Red Hat OpenShift is much better than OKD, especially if you look at lifecycle management. STRATEC only has a small IT operations team, and OpenShift is much easier to manage. The integrated dashboard and the automatic update cycles will help them a lot. And security and compliance were other vital considerations because STRATEC operates in an environment where you get a lot of audits. OpenShift will allow the entire team to guarantee which version was installed at a specific point in time.

Question: Tell us about your proof of concept.

Retzlaff: Our proof of concept is the same as our live build environment. We have a small on-site data center running OpenShift in a virtual environment. We use the Jenkins build pipeline to automate various stages of the software development process and are using the Jenkins plugin for Kubernetes in our new build environment. SVA helped us set up the cluster. We discussed how best to structure our environment and how to make sure we can rebuild specific containers many years into the future if we need to.

Zoll: Kubernetes on Windows was young when we started; it was just a few months old. We found that running Windows environments in OpenShift was unsupported. There was only 1 small piece of documentation about it, which used a very old version of Windows. We took on the challenge to make it work even though there was no documentation for what we needed to do. We had a lot of very technical conversations with someone at Red Hat who had published an article about Windows worker nodes and figured everything out. It was a big challenge, but we did it.

Question: What did you learn from your proof of concept?

Retzlaff: We learned that what we were trying to do is possible, that we could build specific Windows environments to run in OpenShift—and do that without having to install lots of different tools, each tailored toward what our individual Windows environments need. Setting up different Windows environments to run in our OpenShift clusters isn't complicated. Some parts are straightforward, while others are a little more complex because there is some overhead relating to which containers to use, which wasn't there before.

We also figured out a really good update workflow, which saves time and significantly improves our security. The proof of concept also allowed us to streamline our Windows environments, so they are now similar, which helps, too.

Since our proof of concept, Red Hat has produced some good documentation and now provides long-term support for Windows environments running in OpenShift.

Question: What benefits have you seen?

Retzlaff: Thanks to OpenShift and containers, the set-up time for new projects is significantly reduced; we now only need 1 to 2 hours compared to 2 days in our previous build environment. Security has also improved considerably because we now have a more standardized environment where we can update all standard components. And from a compliance perspective, reproducing builds is now easy.

Scalability is also much better. With the virtual machines in our previous build environment, we had 1 virtual machine per project, which meant we could only do 1 build at a time per project. With OpenShift, this limitation is gone. If we have multiple developers working on a project and they all want to run their code through the continuous integration suite, they can now all do that in parallel.

Zoll: When we started this project, STRATEC was hindered by technical limitations in running build shops; expanding the number of virtual machines would have been very complex. Those technical limitations are gone—the only limitation is the number of clusters STRATEC has.

Retzlaff: We can purchase more subscriptions and scale up if we need to run more things in parallel. Any future bottlenecks, once we've migrated all our build environments to OpenShift, can be solved by expanding the clusters.

Question: What's next for STRATEC?

Retzlaff: Our roadmap mainly consists of migrating our current build environment to the new OpenShift-based environment. We also want to move some other services running in our Docker server onto our Red Hat OpenShift cluster because Red Hat OpenShift is a more robust environment.

If we run into any issues, we can contact SVA for help. Or, if we want to try something new or add new environments, we can turn to SVA for anything related to OpenShift. Then, as we saw in the early days of this project, SVA's strong relationship with Red Hat means they know how to find the help we need. SVA has a lot of contacts within Red Hat, which helped us significantly.

About STRATEC

STRATEC SE designs and manufactures fully automated analyzer systems for its partners in the fields of clinical diagnostics and life sciences. Furthermore, the company offers complex consumables for diagnostic and medical applications. For its analyzer systems and consumables, STRATEC covers the entire value chain—from development to design and production through to quality assurance.

The partners market the systems, software and consumables, in general together with their own reagents, as system solutions to laboratories, blood banks and research institutes around the world. STRATEC develops its products on the basis of patented technologies.

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