Executive summary

This case study shows how T-Systems has helped digital hubs in Deutsche Telekom to adapt to the “new normal” in times of global pandemic by providing a solution for virtual agile planning workshops. The project has been completed within less than four weeks, resulting in a solution adhering to DevOps as well as AWS best practices. The application is in productive use for around a year already, managed by T-Systems on AWS.

Customer challenge

The global pandemic hit companies all around the globe and required a quick and massive switch to remote working. As Deutsche Telekom IT is broadly adopting agile methods, notably the Scaled Agile Framework SAFe, there was an urgent need by their digital hubs for a virtual solution for whiteboarding as well as program increment planning workshops (PIPs). At that time (April 2020) there was no company standard for this purpose established. The software that has been selected by the client is an enterprise platform for visual management and collaboration (commercial off the shelf software). While a SaaS version of the software is available, the client decided for a dedicated, self-managed installation for security and data privacy reasons. So, the challenge was to set up the application very quickly (days) and then run the application in a reliable way.

About Deutsche Telekom IT

DTIT is the internal IT service provider of Deutsche Telekom AG. DTIT is responsible for the design, development and operation of all its owned and transferred IT systems supporting business processes at Deutsche Telekom AG. DTIT creates user-friendly web portals with intelligent self-service functions as a basis for an integrated, cross-channel customer experience with the Telekom Magenta brand. DT IT is in the middle of a large-scale transformation program, adopting cloud as well as agile methods such as the Scaled Agile Framework.
Solution architecture

The solution uses the AWS landing zone of the client, which has been set up by DTIT and T-Systems in 2019. The network/VPC is centrally provided (AWS region Frankfurt) as our application is being used from the Telekom intranet. The required infrastructure layout for the selected software is fairly standard so that existing blueprints from T-Systems could be used to deploy two environments, test and production, on AWS very quickly. Our setup uses ELB for load balancing, EC2 instances for running the application and an RDS database for persistence. Several other AWS services are being used for security and system management.

After the infrastructure deployment the application and required middleware components such as Tomcat have been installed following the instructions provided by the software vendor.

DevOps and CI/CD

Due to the quickly growing number of AWS projects by T-Systems we have a repository of standard project templates and pre-configurations that can be reused very easily. That way, we bring the best practices from previous projects into new engagements and can ramp up solutions quickly. As a workbench we use gitlab including pipelines for the deployments; all infrastructure is managed as code so that we can rely on consistent environments/stages. Whenever we need to onboard existing applications already running on AWS we use methods such as "terraform import" to get the landscape into infrastructure as code (terraform state) and version control. In this specific case we needed to consider some requirements coming from the software vendor. So, the software could not be set up on containers and also the EC2 instances could not be redeployed easily due to application license keys bound to unique machine ids. Still we could achieve a suitable level of reliability by using two availability zones as well as the AWS features termination protection and EC2 auto-recovery.

Application operation

T-Systems provides different approaches to application operation including site reliability engineering. In this project we did not develop the software ourselves but rather used a commercial off the shelf product from an external software vendor. For such a scenario the T-Systems cloud application operation model is an excellent fit. It comes with different classes of SLAs up to diamond for the most critical applications and comprises the management of the whole application stack including database, operating system and application. Included are pro-active monitoring, backup/restore, a 24x7 service desk as well as the typical IT service management processes. The services can be delivered from European or offshore locations, depending on client's preferences. In case T-Systems has not performed the application setup, an onboarding process including app assessment, definition of the monitoring and governance processes and testing ensures full operational readiness. For operating applications on AWS we use mostly the native system management services of the platform, including CloudWatch for monitoring, Systems Manager for patching and AWS Backup. Additionally, we use ElasticSearch and Grafana for central logging and monitoring and Opsgenie for paging on-call staff in case of critical events.

Security built-in

At Telekom data privacy and security are of highest priority. That's why every internally used application needs to pass a rigorous Privacy and Security Assessment (abbreviated PSA in the following). For AWS-based applications we use a broad range of AWS security services, including Cloudtrail for security logging, KMS for encrypting data at rest, GuardDuty for security monitoring and SCPs as well as AWS Config Rules for compliance enforcement. Also, we carefully design IAM roles according to the least privilege principle, limit human access to sensitive data and avoid permanent credentials on platform as well as operating system layer. We use hardened operating system images (AMIs) according to Telekom requirements including vulnerability scanning and also rely on secure pre-configurations for all AWS
services used. Internal penetration tests are part of the PSA process as well. Moreover, all AWS accounts with internal Telekom applications are connected with Telekom’s Cyber Defense Center who support in the remediation process and forensics of critical security incidents. This service is also available for external clients of T-Systems.

Results and benefits

The project was completed according to an ambitious schedule. While the setup of the application on AWS and hand-over to application operation took only a couple of days, getting all the way through the process and assessment with PSA approval took around four weeks, which is pretty fast in an enterprise environment.

Now the application is live for around a year already, fully managed by T-Systems. It has been used for many virtual planning workshops even for large hubs of more than 100 people. The performance and reliability of the solution achieved high user satisfaction and really good feedback from client side. With this solution in place the digital hubs could focus on their core tasks, i.e. delivering features for Telekom applications and end-clients in an agile setup according to SAFe, while T-Systems took care for setting up the infrastructure and application on AWS following the cloud provider’s best practices (well-architected framework), supporting the Telekom PSA procedure and operating the application 24x7.

While most employees look forward to eventually meet in person again, the productivity tools for the new normal are certainly here to stay.

Why AWS

AWS has been selected as a platform for several reasons. The client is following a cloud strategy and is about to migrate most of their applications to the public cloud within the next few years. So, all new applications that do not process data with very specific compliance requirements are set up in the public cloud. But even more importantly, application landscapes and environments can be deployed on AWS very quickly and without any infrastructure constraints.

Why T-Systems

T-Systems has a long track record of successfully running mission critical applications on various platforms, from enterprise systems such as SAP to cloud-native applications like the Corona-Warn-App. T-Systems is serving many large enterprise clients and brings a deep industry knowledge in areas such as healthcare, automotive or telecommunications into their projects. Also, T-Systems is a trusted AWS partner for Deutsche Telekom, setting up their landing zones, networks and supporting more and more Telekom hubs and applications in adopting AWS. T-Systems is an accredited AWS managed service provider and advanced consulting partner with a growing list of competencies.

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