

# OPEN SOURCE

## How SAP's Gardener Accelerates Digitalization

Everyone knows that cloud computing is the driving force behind digital transformation. An important component, cloud-native technology, can be found in SAP's Gardener.

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**M**any companies have already started to move their applications and services to cloud-native technologies or have already made specific plans to do so in their planned digitization strategies in the coming years. Implementation is often based on the open source system Kubernetes. Kubernetes has established itself as the de facto standard for automating the provision, management, and scaling of container-based applications and microservices. More than three quarters of all companies were already using cloud computing in 2019, with a clear tendency to use a hybrid and/or multi-cloud strategy, i.e. deploying the same application on a mix of private and public clouds often across different cloud service providers, as opposed to a private cloud strategy. This strategy increases redundancy, reduces the likelihood of outages, and enables better allocation of resources at full capacity. It also enables the use of specialized services from specific public cloud providers. According to Cloud Monitor 2020, a mid-2020 study by Bitkom Research on behalf of KPMG, one in three companies is already using a multi-cloud infrastructure. This is also reflected by the recent sharp rise in customer inquiries on this topic at 23 Technologies, a company specializing in cloud-native technology. However, multi-cloud environments are incredibly difficult to configure, maintain, and monitor.

### Can Kubernetes solve the challenge?

Headquartered in Walldorf, SAP was already faced with the challenge of multi-cloud environments at the beginning of 2017. Kubernetes was to be deployed across public clouds on a large scale with a low total cost of ownership (TCO), complete automation in all areas, 24/7 availability, and high availability for all SAP-internal teams. After an intensive review of the options on the market at the time, including exploring possible acquisitions, the deci-

sion was made to develop its own solution under the guiding principle of „Universal Kubernetes at scale“. The Gardener project was born and has been available as open source software under the Apache License 2.0 on GitHub since January 2018.

Gardener is an open source, Kubernetes-native extension that builds on the aggregation layer of the orchestrator. Open source and SAP in the same sentence? That almost seems like a paradox; after all, 77 percent of all revenue in the global economy flows through a proprietary ERP system from SAP. Even if the idea of an open source SAP platform has not yet caught on everywhere, the company has been using open source solutions for some time and has done very well with them so far. Gardener is essentially a Kubernetes-native server for extension APIs connected to a package of custom controllers.

### Gardener continues to grow

With Gardener, the management of homogeneous Kubernetes clusters on public cloud providers such as AWS, Azure, Google, or Open Telekom Cloud is possible today. Private cloud solutions such as OpenStack or VMware are also fully supported. Day-1 as well as Day-2 operations are an integral part of Gardener and enable cluster monitoring, updating, auto-scaling, hibernation, and much more. With SAP's active participation in Gaia-X as well as the Catena-X Automotive Network, Gardener has the potential to become an open, coherent, and extensible standard. This is also reflected in a very well-developed ecosystem of commercial vendors who specialize in Gardener, such as Stuttgart-based 23 Technologies. Its products 23KE and 23REP, based on the open source projects Gardener and Kyma, enable the use of cloud-native technology for industrial applications.

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is becoming more important in the SAP community. New topics include Apache, OpenStack, Hadoop, KVM, Cloud Foundry, and more. Every month, this column comments on the open source scene.

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