Despite the innovations of the past decade, DevOps can still look radically different from one use case to another. The result is that no one in the industry knows what specific DevOps solution will work best for a given organization.

DevOps is a “choose your own adventure” situation. Organizations have to evaluate their own goals, skills, bottlenecks, and blockers and then iterate toward a modern application development and deployment process that works for them. And that’s OK!

NetApp offers an innovative approach, built around a data fabric and an industry-leading portfolio of products and solutions that are already being leveraged for DevOps in organizations around the world. However, the reality of one-size-fits-all, plug-and-play DevOps is still far off.

Today we are excited to share a new approach, using Kubernetes, that we developed through much trial and error, which makes it possible for us to get the most out of our hybrid multicloud environment, faster and more easily. Kubernetes connected the dots between the disparate DevOps solutions we were using internally, and the results have been game changing.

We offer our own NetApp use case as the template, not as the only answer, for building a modern, simpler DevOps solution that can span any hybrid multicloud environment.

We believe that containers represent the evolution of DevOps out of “public cloud purgatory.” That’s not to denigrate public clouds. Without them it would be impossible to support the ever-more-demanding workloads that are essential for deriving business value from data. However, as customers recognize that in a hybrid multicloud world, vendor lock-in is a substantial barrier to innovation and true agility, they often struggle to absorb, adopt, and leverage innovation in a multicloud environment. “Cloud agnostic” means the ability to avoid vendor lock-in and to move from one cloud to another without negative consequences for IT and business process.

Flexibility and freedom should be the high priorities for DevOps teams today. With the “gravity” of data becoming heavier and heavier, realizing that it might be easier to move the entire infrastructure itself, rather than the data it contains, is an epiphany. Achieving true application portability is the answer to addressing the economic factors and complexity concerns that plague modern DevOps.

We’re excited to give you a peek behind the curtain and show you what application portability looks like in action at NetApp.

**NetApp’s Internal DevOps: An End-to-End CI/CD Pipeline**

This example is based on the evolution of our own internal engineering process, in this case the team that develops the NetApp® SolidFire® and NetApp HCI product lines. Last year we moved to the Scaled Agile Framework (SAFe) for our product development process. And we are revamping our internal DevOps mechanisms and patterns, building out a DevOps-ready automation platform to support continuous integration/continuous delivery (CI/CD), rapid prototyping, and hybrid-cloud scaling.
NetApp HCI, with the Hybrid Cloud Control manageability suite enabled, serves as the starting point for our solution, leveraging NetApp Kubernetes Services (NKS) as the microservice and application infrastructure orchestration mechanism. From there we’re using a Jenkins and native build pipeline pulling from Git repositories, feeding into the binary management system. Kubernetes then orchestrates the deployment and state of our target applications, using the NetApp Trident storage orchestration layer for persistent volume claims for stateful datasets.

As we scale the deployment further, we can tell NKS to expand out to any one of the “big three” public clouds—Amazon EC2, Google Cloud Platform, and Azure—and we use an Istio service mesh to create a federated hybrid multicloud application that spans disparate cloud infrastructures.

By implementing this approach internally, NetApp has dramatically shortened the lead times for creating CI/CD software pipelines for internal development, in some cases by more than two orders of magnitude. In addition, we are able to adapt and create new functionality for our developers in ways we’ve never been able to before.

What Can Cloud-Agnostic DevOps Do for You?

The NetApp family of products, integrations, and services can be woven together with standard open-source DevOps tools to create an end-to-end pipeline that is multicloud-enabled by default, capable of scaling to any organizational size, from a single team of developers with a site reliability engineer, all the way up to the global enterprise tier with thousands of contributors. Can your environment do that?

Only NetApp offers a true data center-to-multicloud abstraction layer that is generally available today, with nearly 20,000 clusters deployed in customer production environments.

Build a Data Fabric with NetApp, Solve Key Challenges

• Develop on your premises, then scale production deployment globally via multiple public clouds.
• Or prototype rapidly in the cloud, then deploy to local or regional data centers for an enterprise wide application release.
• Or keep a large part of your data systems in guarded secure private data centers while still taking advantage of public cloud offerings.

Creating a hybrid-cloud application or a hybrid IT platform has never been easier. You can get started today with NetApp hybrid cloud solutions for cloud native development.

We’re excited to share more as we continue to experiment. In the coming weeks, we plan to publish a series of blogs and videos on NetApp’s technical ecosystem site, Tepui, and to release a GitHub code repository where you can download, test, and try out our approach in your own environment.