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PowerFlex and Amazon: Destination EKS Anywhere

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January 13th, 2022 | Read Time: 5 minutes   TF   Tony Foster

Welcome to your destination. Today Dell Technologies is pleased to share that
Amazon Elastic Kubernetes Service (Amazon EKS) Anywhere has been validated
(https://aws.amazon.com/eks/eks-anywhere/partners) on Dell PowerFlex
(https://www.delltechnologies.com/en-us/storage/powerflex.htm#tab0=0)
software-defined infrastructure. Amazon EKS Anywhere is a new deployment
option for Amazon EKS that enables customers to easily create and operate
Kubernetes clusters on-premises while allowing for easy connectivity and

Dell Technologies collaborates with a broad ecosystem of public cloud providers to help our customers support multi-cloud environments that help place the right data and applications where it makes the most sense for them. Deploying Amazon EKS Anywhere on Dell Technologies infrastructure streamlines application development and delivery by allowing organizations to easily create and manage on premises Kubernetes clusters.

Across nearly all industries, IT organizations are moving to a more developer-oriented model that requires automated processes, rapid resource delivery, and reliable infrastructure. To drive operational simplicity through Kubernetes orchestration, Amazon EKS Anywhere helps customers automate cluster management, reduce support costs, and eliminate the redundant effort of using multiple open source or 3rd party tools to manage Kubernetes clusters. The combination of automated Kubernetes cluster management with intelligent, automated infrastructure quickly brings organizations to the next stop in their IT Journey, allowing them to provide infrastructure as code and empower their DevOps teams to be the innovation engine for their businesses.

Let us explore Amazon EKS Anywhere on PowerFlex and how it helps you move towards a more developer-oriented model. First, let's look at the requirements for Amazon EKS Anywhere.

To deploy Amazon EKS Anywhere we will need a PowerFlex environment running VMware vSphere 7.0 or higher. Specifically, our validation used vSphere 7.0.2. We will also need to ensure we have sufficient capacity to deploy 8 to 10 Amazon EKS VMs. Additionally, we will need a network in the vSphere workload cluster with a DHCP service. This network is what the workload VMs will connect to. There are also a few Internet locations that the Amazon EKS administrative VM will need to reach, so that the manifests, OVAs, and Amazon EKS distro can be downloaded. Initial deployments can start with as few as four PowerFlex nodes and grow to meet the expansion needs of storage, compute, or both for scalability of over 1,000 nodes.

The logical view of the Amazon EKS Anywhere environment on PowerFlex is illustrated below.
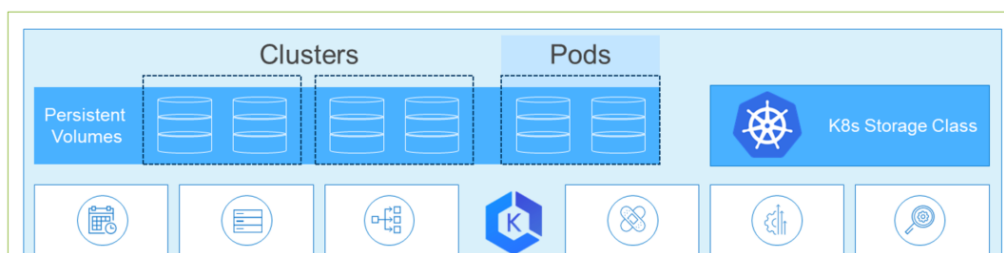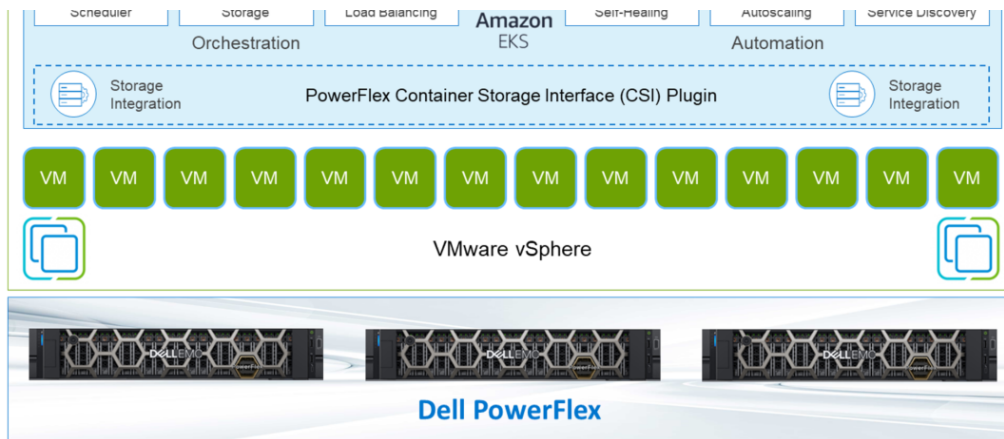
There are two types of templates used for the workloads: a Bottlerocket template and an Ubuntu image. The Bottlerocket template is a customized image from Amazon that is specific to Amazon EKS Anywhere. The Ubuntu template was used for our validation.

Note: Bottlerocket is a Linux-based open-source operating system that is purpose-built by Amazon. It focuses on security and maintainability, and provides a reliable, consistent, and safe platform for container-based workloads. Amazon EKS managed node groups with Bottlerocket support enable you to leverage the simplicity of managed node provisioning and lifecycle management features, while using the latest best practices for running containers in production. You can run your Kubernetes workloads on Bottlerocket nodes and benefit from enhanced security, higher cluster utilization, and less operational overhead. https://aws.amazon.com/blogs/containers/amazon-eks-adds-native-support-for-bottlerocket-in-managed-node-groups/ (https://aws.amazon.com/blogs/containers/amazon-eks-adds-native-support-for-bottlerocket-in-managed-node-groups/)

After the Amazon EKS admin VM is deployed, a command is issued on the Amazon EKS admin VM. This deploys the workload clusters and creates associated CRD instances on the workload cluster. This illustrates the ease of container deployment with Amazon EKS Anywhere. A single instance was prepped, then with some built-in scripting and commands, the system can direct the complex deployment. This greatly simplifies the process when compared to a traditional Kubernetes deployment.

At this point, the deployment can be tested. Amazon provides a test workload that

The design that was validated was more versatile than a typical Amazon EKS Anywhere deployment. Instead of using the standard VMware CNS-CSI storage provider, this PowerFlex validation uses the Dell PowerFlex CSI plugin. This makes it possible to take direct advantage of PowerFlex's storage capabilities. With the CSI plugin, it is possible to extend volumes through Amazon EKS, as well as snapshot and restore volumes.

This allows IT departments to move toward developer-oriented processes. Developers can work with storage natively. There are no additional tools to learn and no need to perform operations outside the development environment. This can be a time savings benefit to developer-oriented IT departments.

Beyond storage control in Amazon EKS Anywhere, the results of these operations can be viewed in the PowerFlex management interface. This provides an end-to-end view of the environment and allows traditional IT administrators to use familiar tools to manage and monitor their environment. This makes it easy for the entire IT organization's journey to move towards a more developer centric environment.
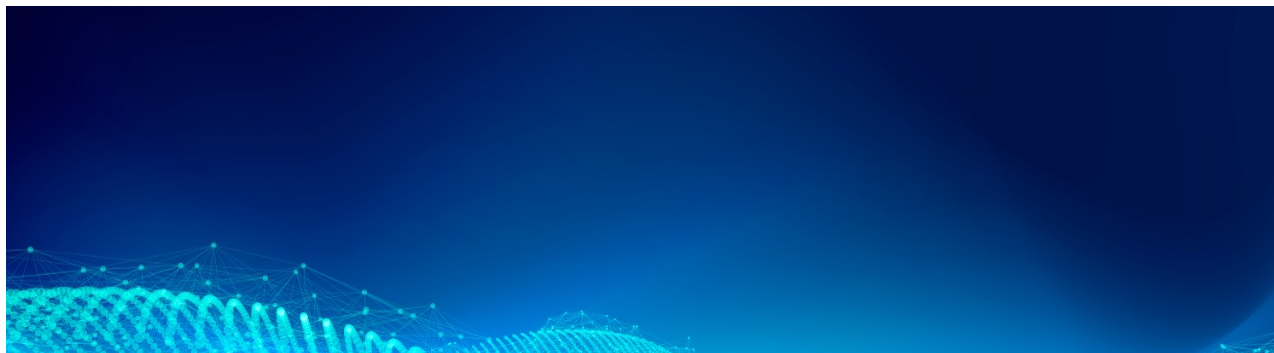
By leveraging Amazon EKS Anywhere on PowerFlex, organizations get on-premises Kubernetes operational tooling that's consistent with Amazon EKS. Organizations are able to leverage the Amazon EKS console to view all of their Kubernetes clusters (including Amazon EKS Anywhere clusters) running anywhere, through the Amazon (https://docs.aws.amazon.com/eks/latest/userguide/aws-connector.html) EKS Connector (https://docs.aws.amazon.com/eks/latest/userguide/aws-connector.html). This brings together both the data center and cloud, simplifying the management of both.

In this journey, we have seen that Amazon EKS Anywhere has been validated on Dell PowerFlex, shown how they work together, and enable expanded storage capabilities for developers inside of Amazon EKS Anywhere. It also allows you to use familiar tools in managing the environment. To find out more about Amazon EKS anywhere on PowerFlex, talk with your Dell representative.

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JB   **Jason Boche**

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A number of years ago, I began hearing about containers and containerized applications.
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practical uses of containerized applications. A short time later, my perception was that focus
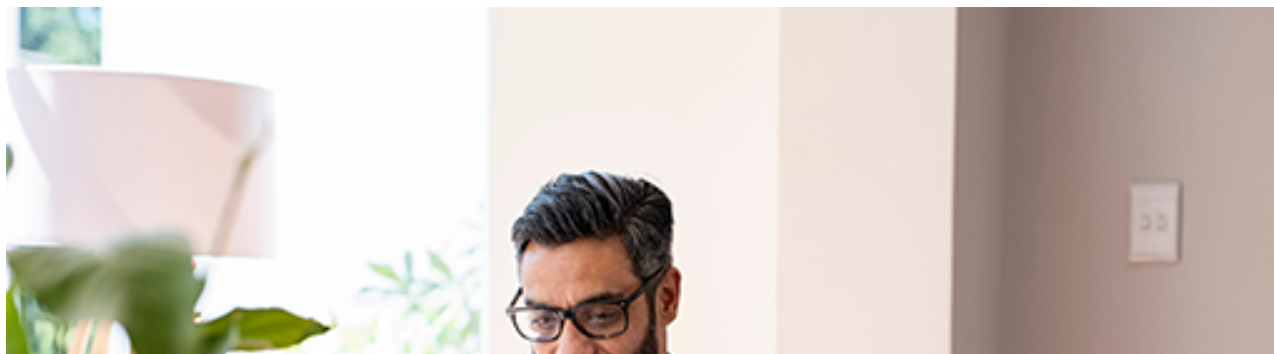
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Introduction

Microsoft SQL Server 2019 introduced a groundbreaking data platform with SQL Server 2019 Big Data Clusters (BDC). Microsoft SQL Server Big Data Clusters are designed to solve the big

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