Product Datasheet:
Aerospike Kubernetes Operator

AEROSPIKE

RUN AND MANAGE AEROSPIKE CLUSTERS ON KUBERNETES

Overview

To deliver superior digital experiences, a new set of technology requirements has emerged. Kubernetes has become the de facto standard as enterprises try to juggle multiple siloed clouds, highly distributed apps, numerous databases, and many pieces of interconnected infrastructure. Automation is essential to operate, and helping to address these challenges are Operators, a method of deploying and managing Kubernetes applications.

The Aerospike Kubernetes Operator was introduced to provide cloud portability and automates operational best practices for deploying and managing Aerospike Enterprise. It unburdens organizations from the complexity of infrastructure operations and empowers them to manage Aerospike clusters and data with maximum flexibility.

Highlights

- **Easily manage Aerospike clusters on Kubernetes:** Automatically deploy and operate multi-node clusters
- **Reduce operational complexity:** with automated upgrade/downgrade and other configuration changes
- **Deploy operational best practices for DevOps efficiency:** Easily coordinate a large number of clusters
- **Enjoy multi-level robust security:** Provide granular control to meet self-imposed and regulatory compliance and standards with fine-grained security controls and encryption.
- **Implement a cloud-agnostic hybrid cloud deployment strategy:** Supports Kubernetes 1.16+, Amazon Elastic Kubernetes Service (EKS), Google Kubernetes Engine (GKE), and Microsoft Azure Kubernetes Service (AKS)

Run and Manage Aerospike Distributed Clusters everywhere

The Aerospike Kubernetes Operator lets you efficiently deploy and operate your Aerospike clusters. It automates the management of common Aerospike database tasks such as the configuration, provisioning, scaling, and recovery of Aerospike clusters, thereby reducing the complexity of manual deployment and lifecycle management.

Key Features

Cluster Provisioning
The Operator takes care of provisioning nodes according to your exact requirements

Multiple Clusters and XDR
Single k8s namespace or in multiple k8s namespaces.

Persistent Storage Volumes
Define for each node in your cluster to allow pods to be recovered

Cluster Monitoring
With Prometheus exporter

Backup and Auto-recovery
Detect node failures and use object store as a backup target

Automatic Scalability
Scale your cluster up or down by changing a simple configuration parameter

Upgrade Cluster
New versions upgrades/ downgrades

Configurations
Manage updates with the Operator

TLS Support
Client certificate authentication

Rack Awareness
Ensure load is split and nodes in the cluster are deployed equally

Simplify Running your Aerospike Clusters

Automate database provisioning, scaling and maintenance. Abstract away the complexities of high availability and zero-downtime upgrades with native Kubernetes.

Deploy - multi-node clusters by writing a small configuration and pushing it to Kubernetes

Recover - automatically from node failures

Scale - clusters up or down as your application workload changes

Balance - load between racks or zones

Upgrade - automatically to new versions of Aerospike Enterprise

Manage - cluster configurations to your specifications

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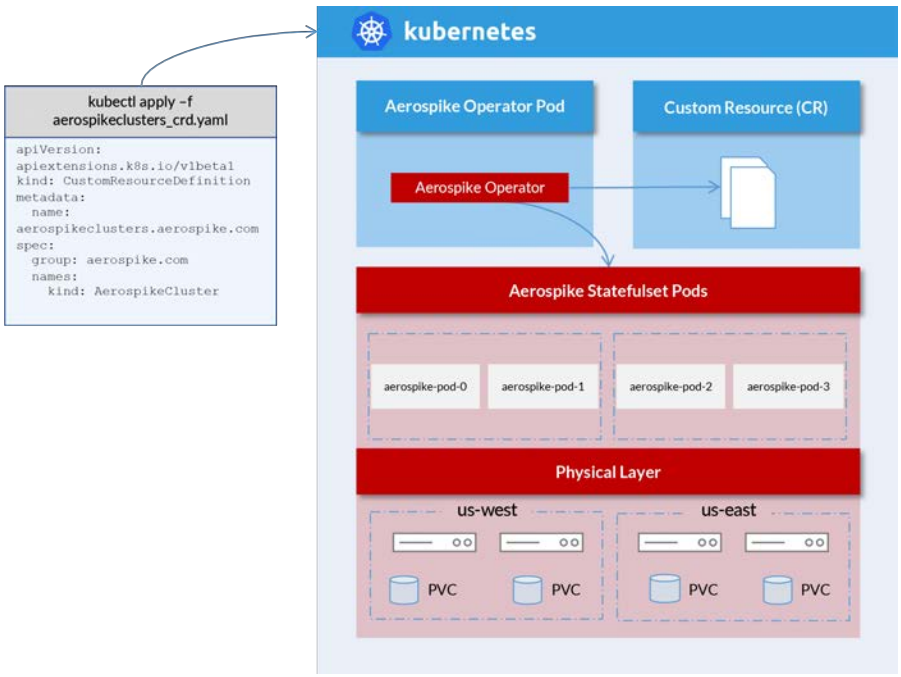
High Level Architecture

The Aerospike Kubernetes Operator has a custom controller, written in Go, that allows us to embed specific lifecycle management logic to effectively manage the state of an Aerospike cluster. It does so by managing a Custom Resource Definition (CRD) to extend the Kubernetes API for Aerospike clusters. Regular maintenance to the Aerospike cluster deployment and lifecycle management are performed by updating an Aerospike cluster Custom Resource (CR).



The Aerospike Operator is deployed with StatefulSet and operates as a headless service to handle the DNS resolution of pods in the deployment.

A layered approach is taken to orchestration which allows the Aerospike Operator to manage Aerospike Cluster tasks outside of the Aerospike deployment.

Kubernetes StatefulSets is a workload API object that is used to manage stateful applications. It manages the deployment and scaling of a set of Pods, and provides guarantees about the ordering and uniqueness of these Pods (e.g. as unique addressable identities).

An Aerospike node resides on a pod that is hosted on a different VM or physical server.

Deployment Options

Avoid vendor lock-in with a cloud-agnostic application deployment and management platform that enables developers to migrate freely between clouds.

In Public Cloud

- Amazon Elastic Kubernetes Service (EKS)
- Google Kubernetes Engine (GKE)
- Microsoft Azure Kubernetes Service (AKS)

In Data Centers and Private Cloud

- Supports Kubernetes 1.16, 1.17, 1.18

Supports Aerospike Enterprise 4.6 and later

www.aerospike.com/products/kubernetes-operator/

AEROSPIKE

About Aerospike

Aerospike is the global leader in next-generation, real-time NoSQL data solutions for any scale. Aerospike enterprises overcome seemingly impossible data bottlenecks to compete and win with a fraction of the infrastructure complexity and cost of legacy NoSQL databases. Aerospike's patented Hybrid Memory Architecture™ delivers an unbreakable competitive advantage by unlocking the full potential of modern hardware, delivering previously unimaginable value from vast amounts of data at the edge, to the core and in the cloud. Aerospike empowers customers to instantly fight fraud; dramatically increase shopping cart size; deploy global digital payment networks; and deliver instant, one-to-one personalization for millions of customers. Aerospike customers include Airtel, Banca d'Italia, Experian, Nielsen, PayPal, Snap, Verizon Media and Wayfair. The company is headquartered in Mountain View, Calif., with additional locations in London; Bengaluru, India; and Tel Aviv, Israel.

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