Backup and Mobility For Kubernetes Applications

Vaibhav Kamra

@kastenhq @vaibhavkamra

agenda
what we'll cover

01 Application Patterns

02 Backup and Mobility

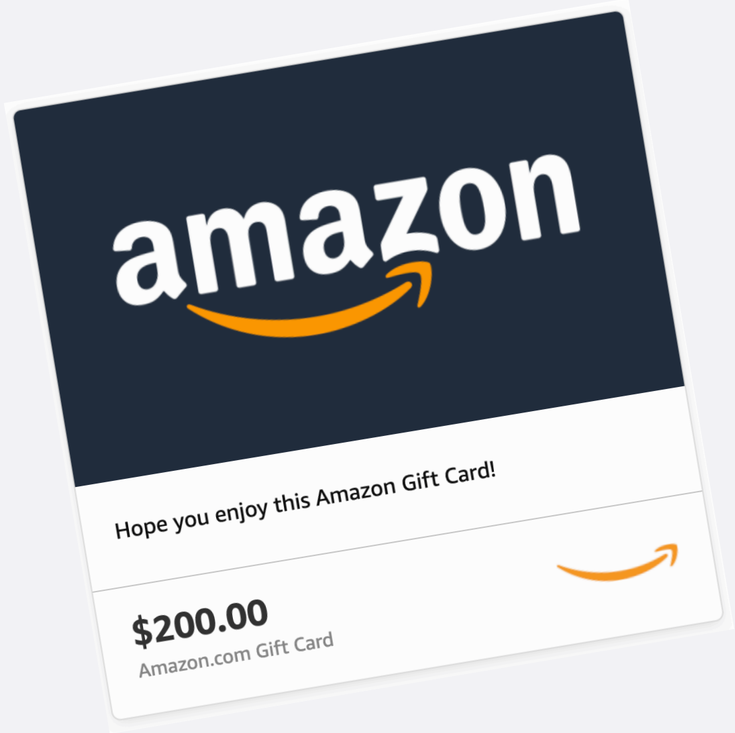
03 Getting It Right

04 Q&A

webinar survey
help us improve

Your feedback will help us improve our webinar and you can register for our prize drawing on October 25th!

http://bit.ly/kasten-webinar



about me

Vaibhav Kamra

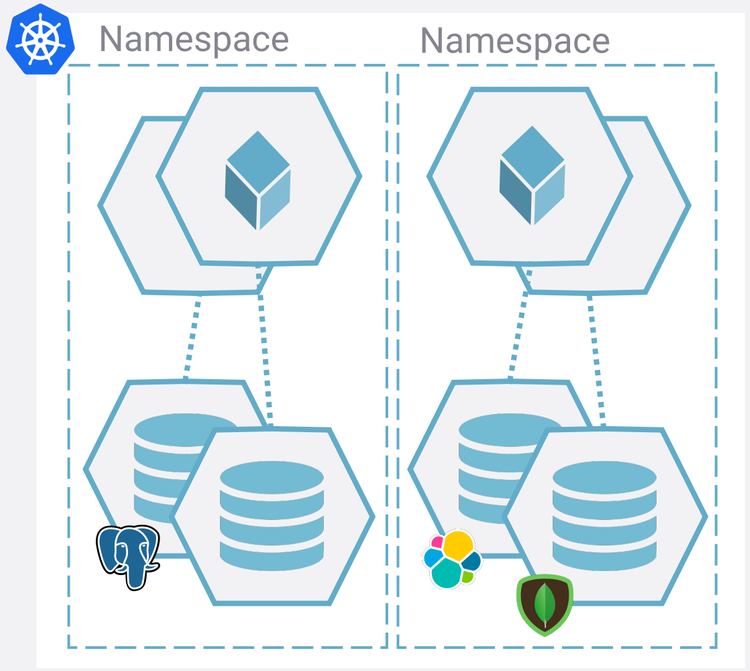
CTO & Co-Founder @ Kasten

Previously:

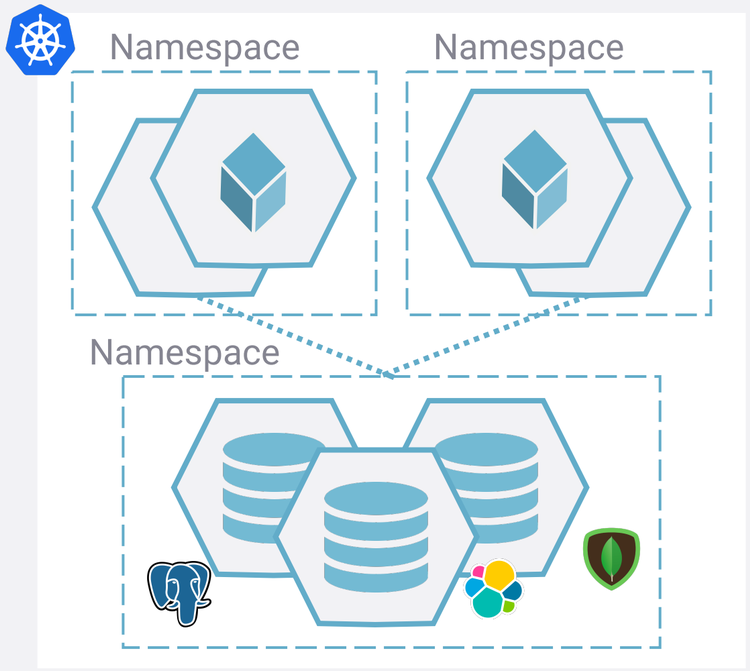
EMC² Maginatics Microsoft

kubernetes stateful applications
wide variety of patterns

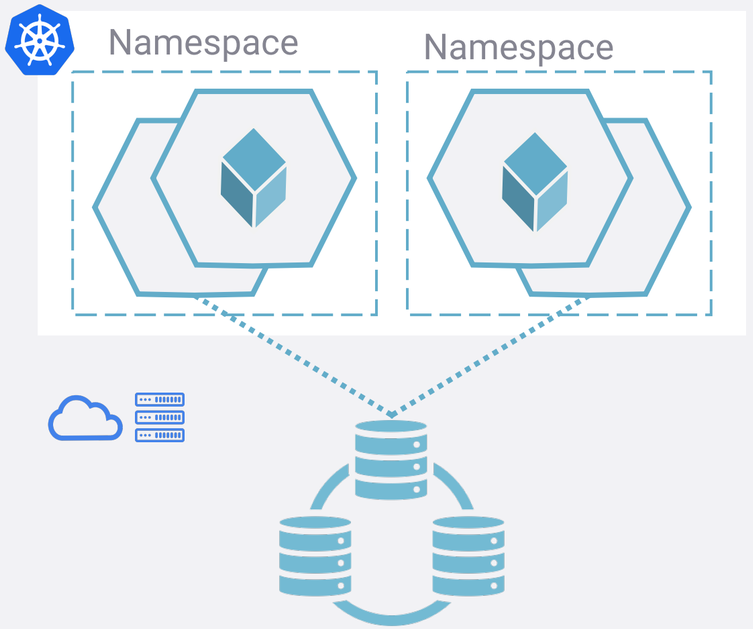
Application includes data services – all in Kubernetes



Application and Data Services in Kubernetes – separate namespaces



Application uses data services outside of Kubernetes



backup and recovery
what and why

Systems in place to recover applications and data if things go bad

Accidental or Malicious Data Loss

Infrastructure or Hardware Failure

Application Misconfiguration

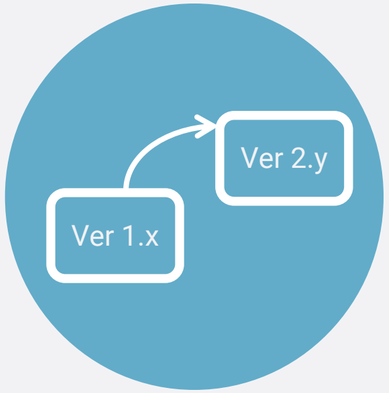
Compliance and Auditing

mobility
what and why

Ability to move an application *and* data to a different environment

Disaster/
Site Failure

Multi and Hybrid
Cloud



Upgrade via
Migration

backup and mobility strategy
key elements

Automation

Automated discovery and operations. Avoiding manual actions that will not scale and are error prone.

Schedule and Policies

Retention schedules to ensure compliance and prevent storage costs from adding up.

Security and Encryption

Authentication, authorization, and encrypted at rest and in-flight keeping your data safe.

Flexibility

Support for all environment and data service types making your applications *truly* portable.

backup and mobility strategy
key elements

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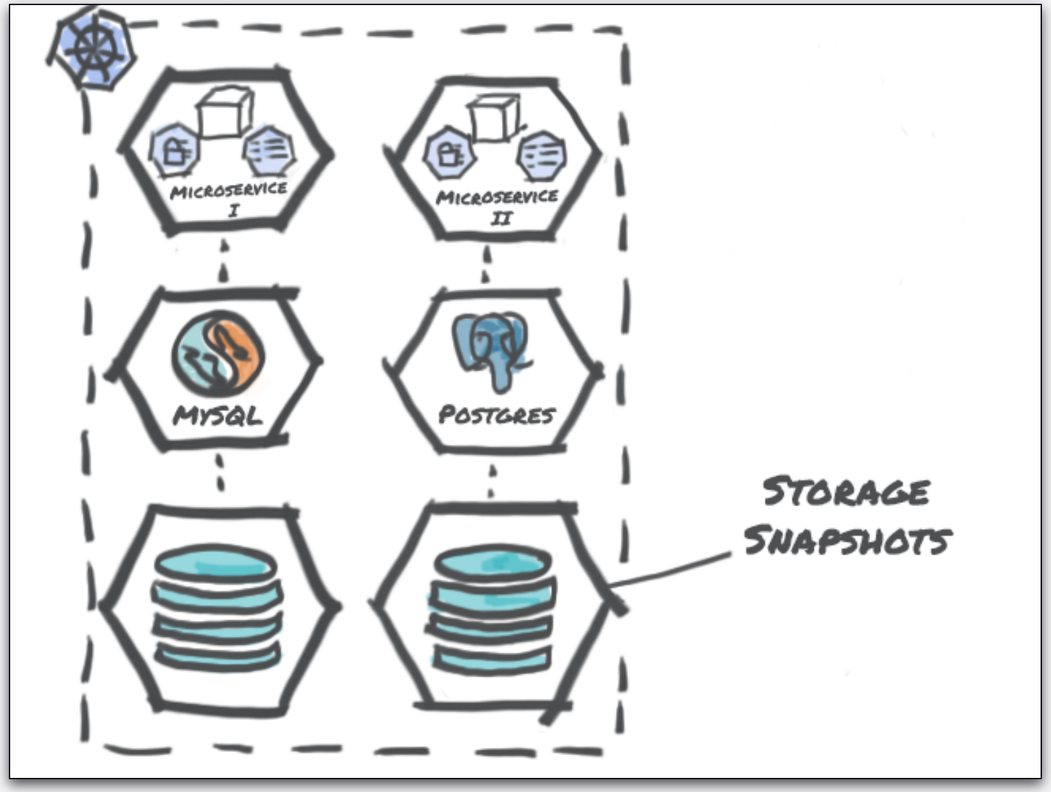
use cases:
backup, recovery, mobility

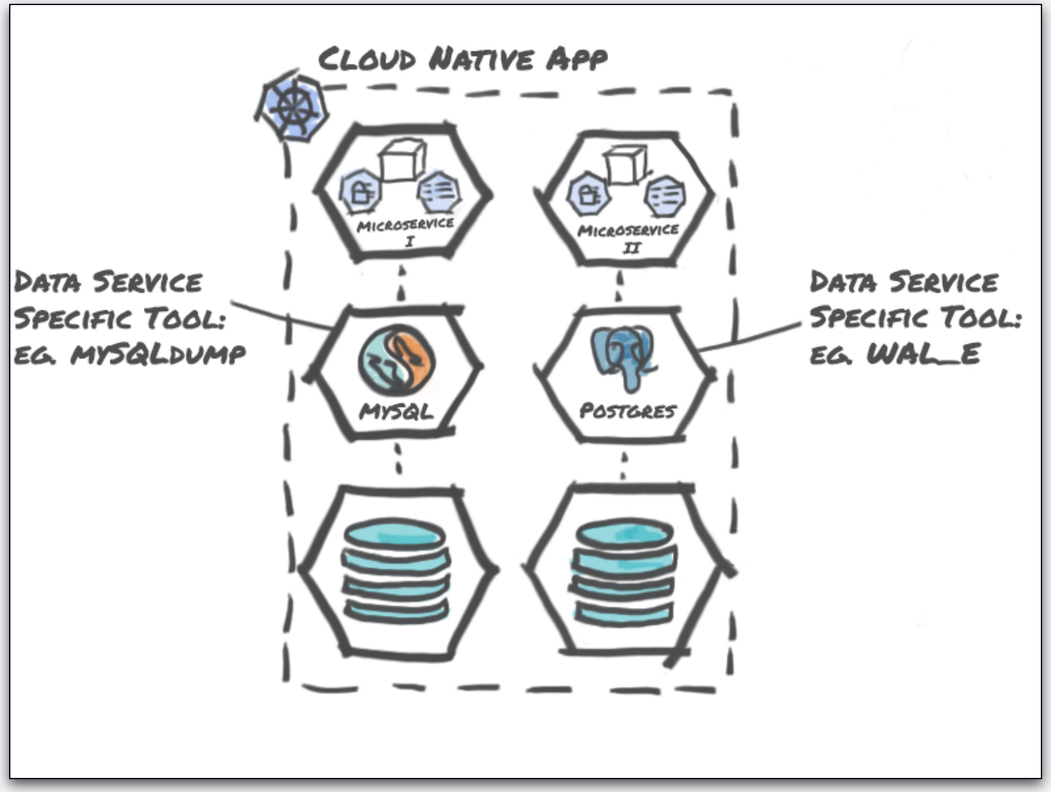
Backup

Recovery

Mobility

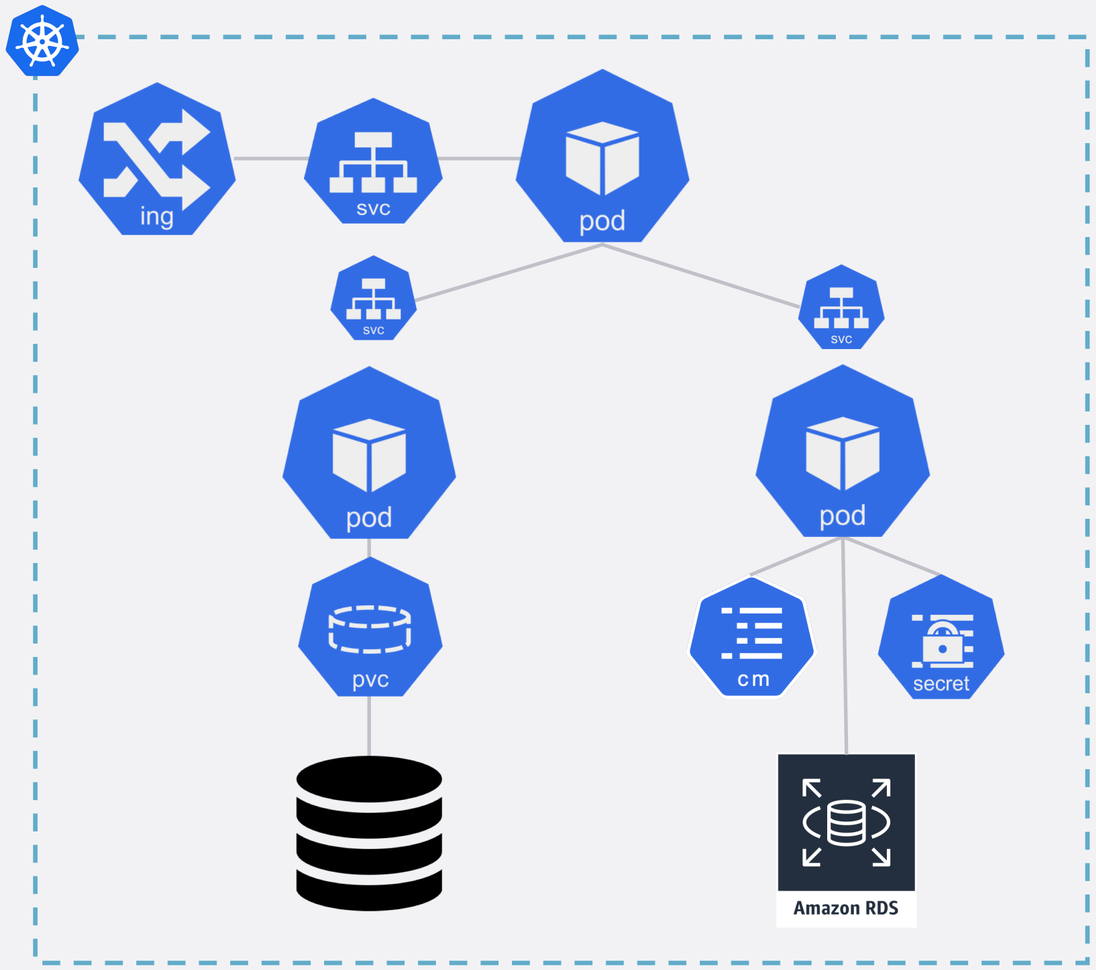
backup
data capture





https://blog.kasten.io/posts/flavors-of-data-management-in-kubernetes/

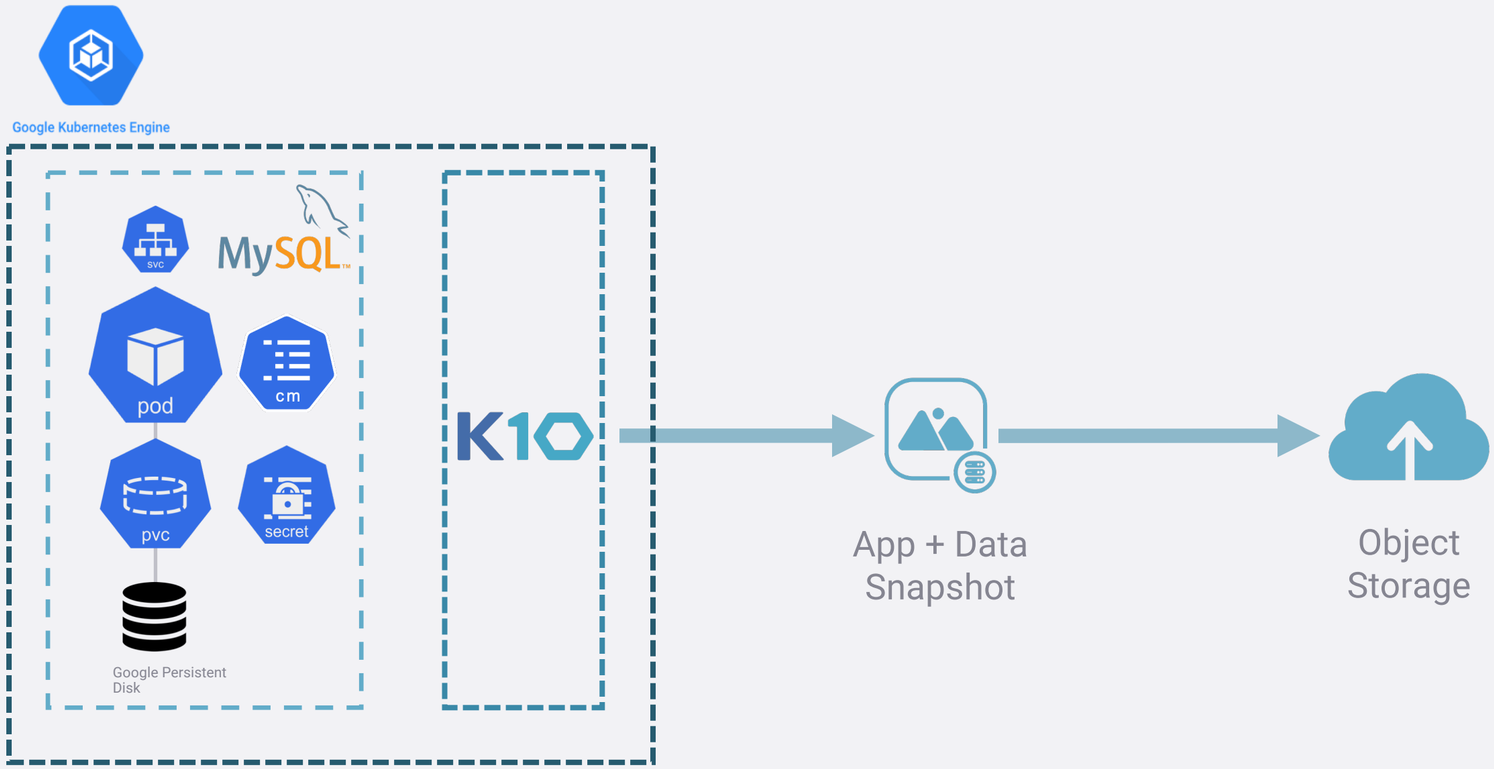
backup
x-ray into a stateful application



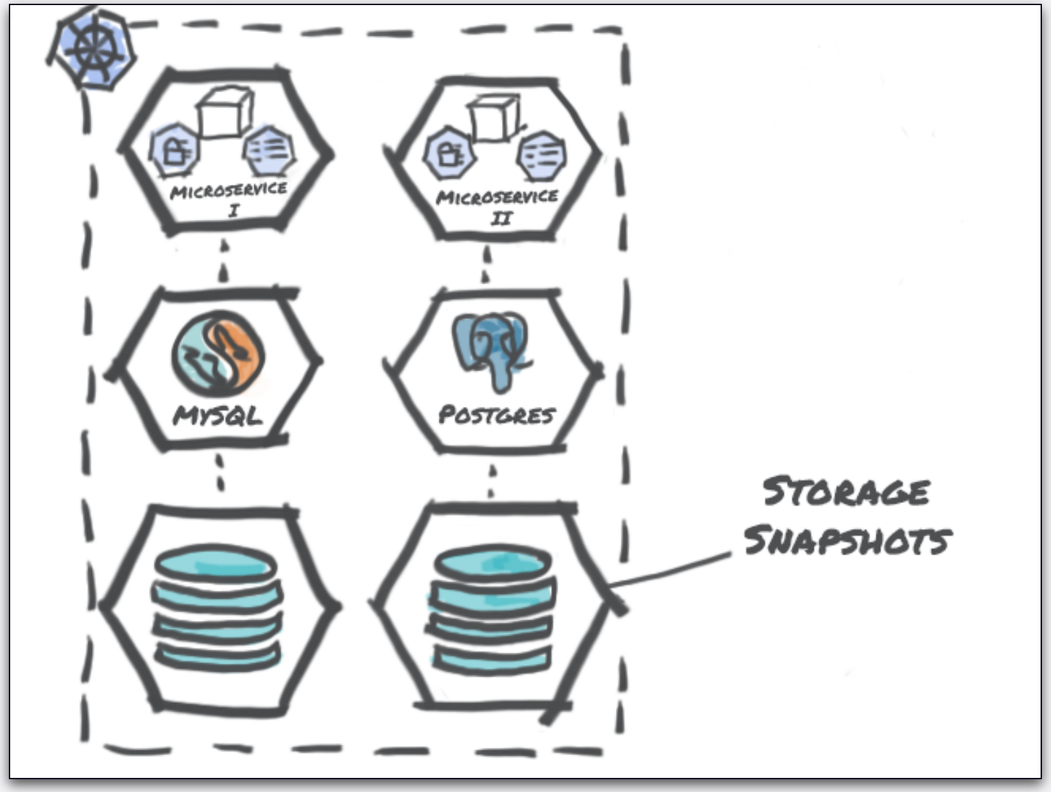
Real Production Application

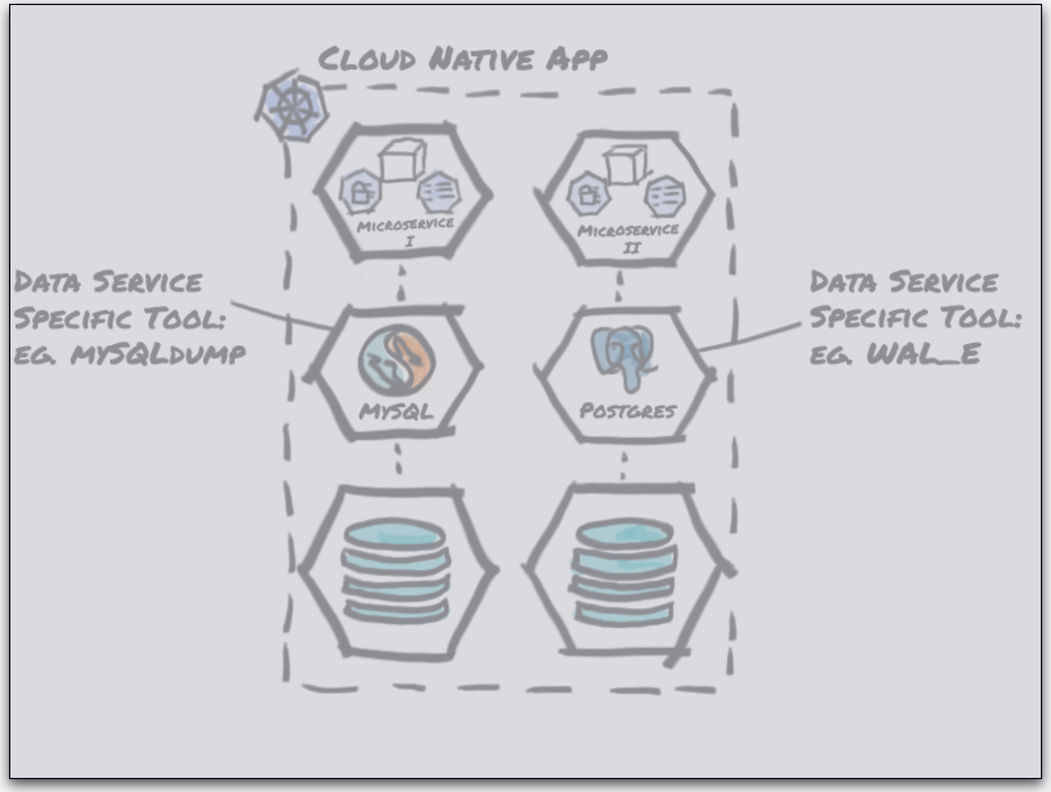
Component Type	Number
Pods	106
Secrets	92
Services	87
Deployments	76
Certificates	70
ConfigMaps	36
Persistent Volumes	16
Other K8s Components	55
Total	**538**

backup
demo


Google Kubernetes Engine
svc
MySQL
pod
cm
pvc
secret
Google Persistent Disk
K10
App + Data Snapshot
Object Storage

backup
demo app – storage snapshots





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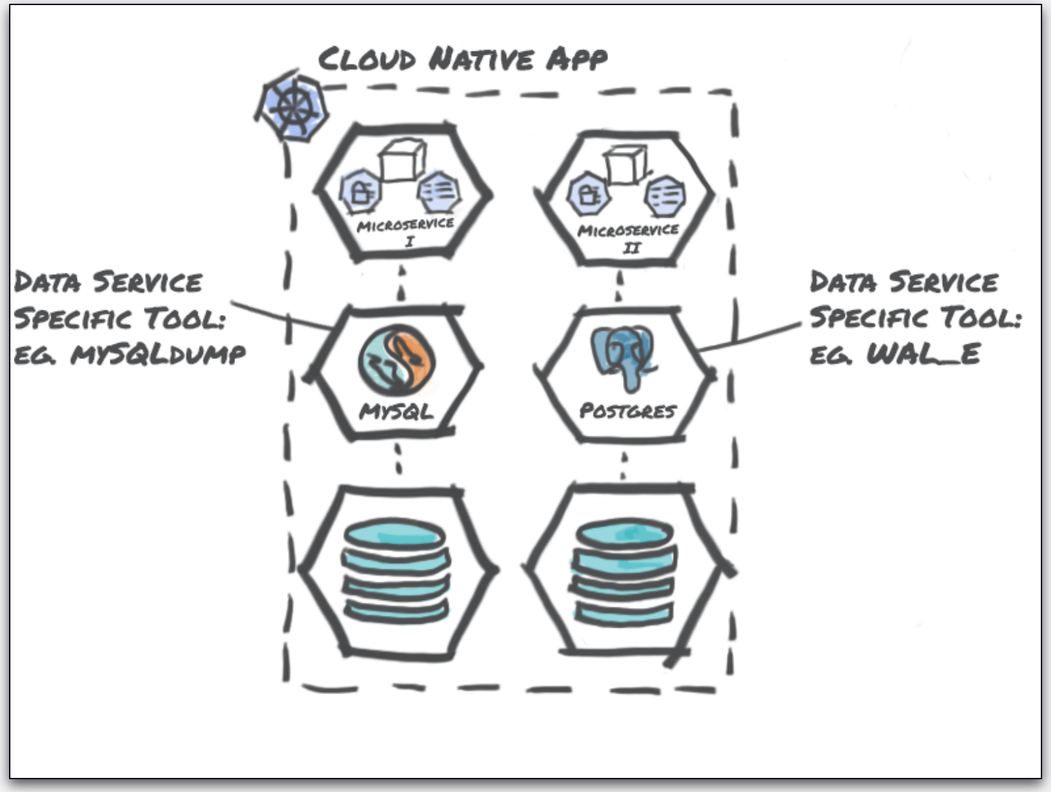
backup
demo app – data service snapshots



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kanister framework
extensibility for data management workflows

KANISTER

Open-Source Framework

Developer Focused

kanister.io

backup
demo

Backup

Policy based application-specific snapshot and backup to an object storage location with compliance, scheduling, visibility and auto-discovery

Complete Application Capture
Consistent data and application resources capture

Policy-based scheduling and retention
Independent snapshot, backup and retention schedules

Support for all application architectures
Support a wide variety of data sources, not just volume snapshots

Extensible via Kanister. Full automation of any workflow and custom actions

use cases

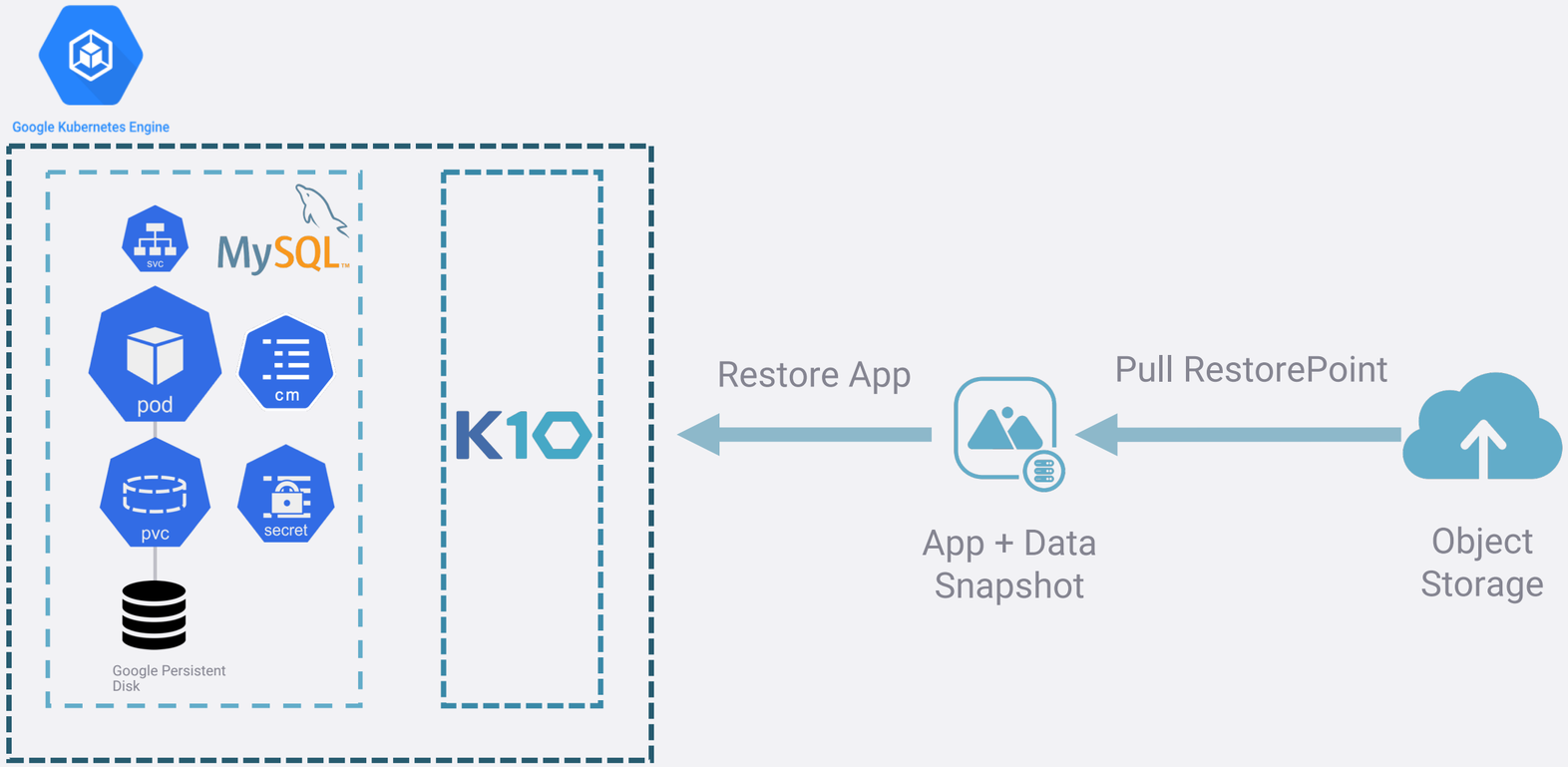
backup, recovery, mobility

Backup

Recovery

Mobility

recovery
demo



recovery
demo

Recovery

Recover complete application and data in-place to a previous point-in-time by repaving infrastructure

Complete Application Recovery
Full application recovery including data and resources

Flexibility
Support for partial restores and cloning

Automation
Orchestration of infrastructure repaving and Kubernetes resource/data operations

Extensible via Kanister. Full automation of any workflow and custom actions

use cases

backup, recovery, mobility

Backup

Recovery

Mobility

mobility
need freedom of choice

Kubernetes

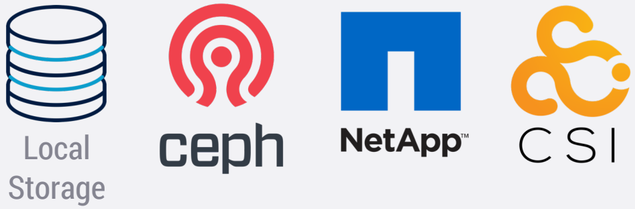
Public Cloud Solutions

On-Premises Distributions

Storage Systems

Public Cloud Storage

On-Premises Storage



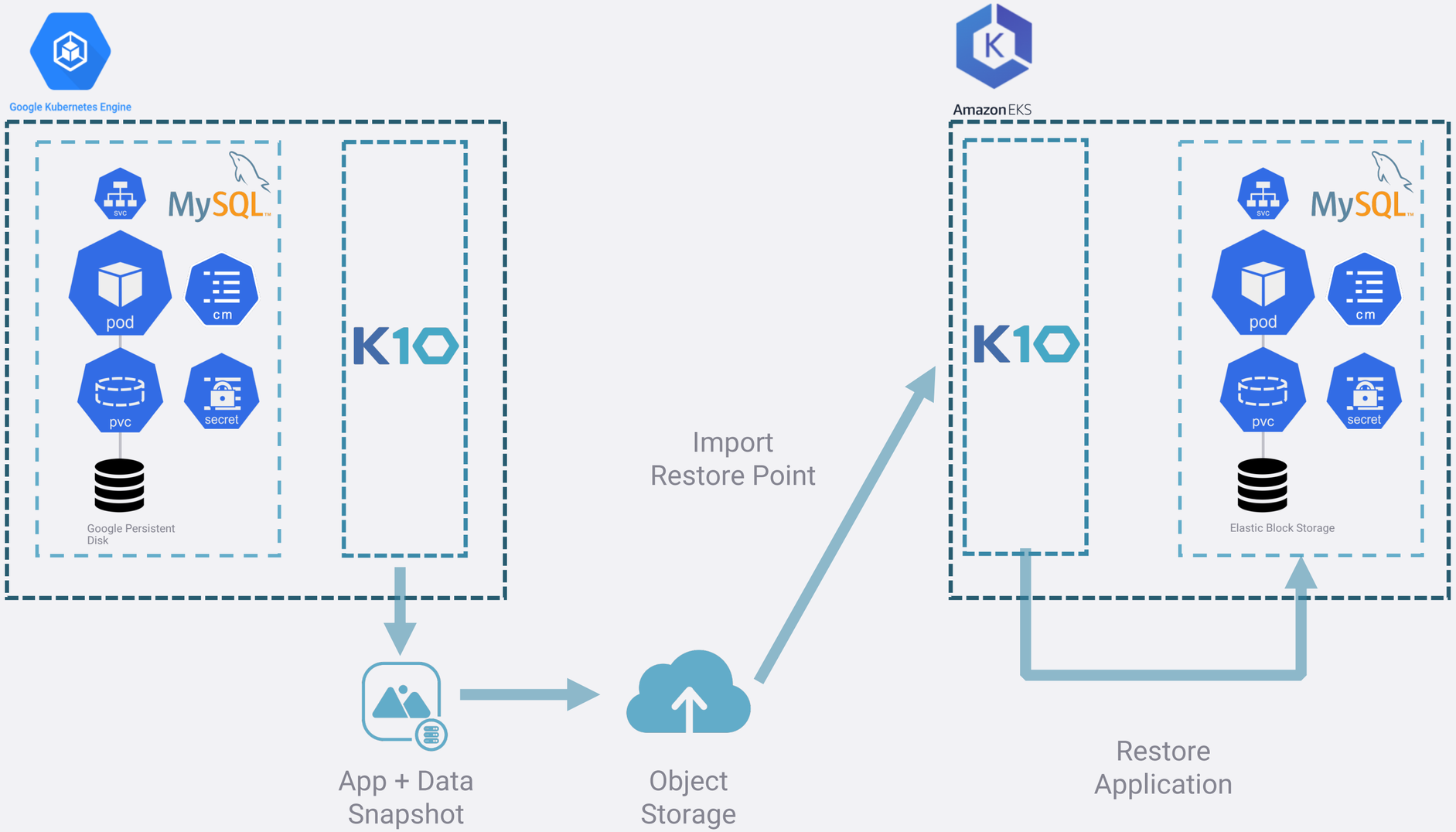
Other Data Stores

Object Storage

Data Services

And many more...

mobility
demo



mobility
demo

Mobility

Cloned an application and data across clouds and non-federated clusters

Cross-cluster clone of entire application

Make applications truly portable
Abstract away infrastructure specifics

No storage overlay required

Leverage best-in-class native storage in cloud/on-prem environments
No extra management, performance or cost overhead of a SDS solution

Automation

Policy-based and extensible via Kanister
Enable one time or periodic clones, DR-testing, prod->dev/test refresh

kasten K10
kubernetes backup and mobility made easy

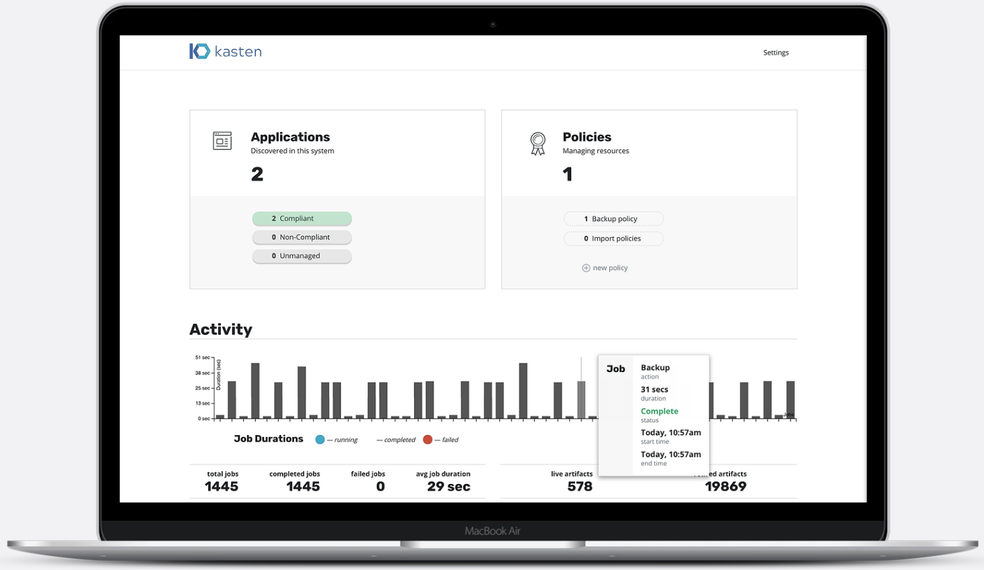
K10 PLATFORM

Data Management Platform

Try the full-featured starter edition free:
https://kasten.io/product

<$500 and <30 days on Google

- Built for Kubernetes
- Ease of Use
- Rich Ecosystem
- Secure



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Questions?

Coming to KubeCon 2019 in San Diego?

You can find us at: Booth S41

kasten.io

@kastenhq @vaibhavkamra