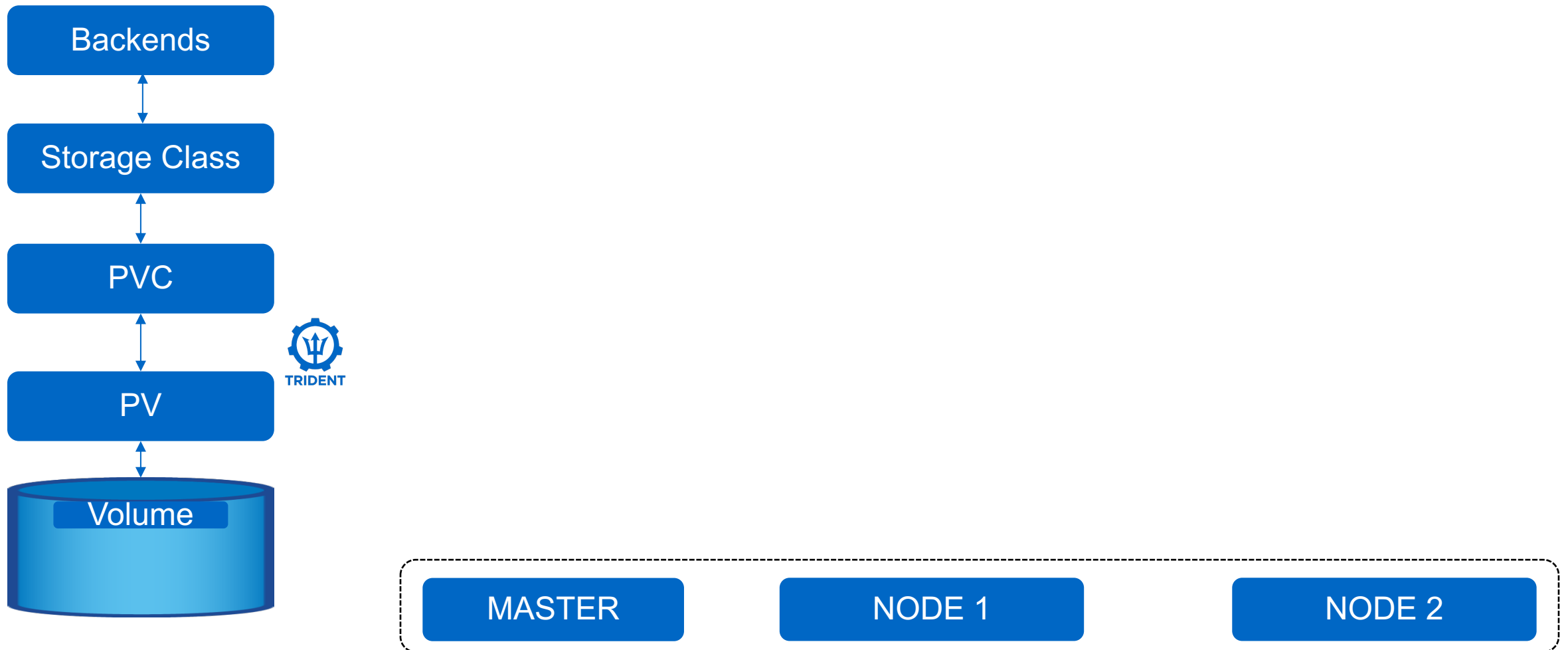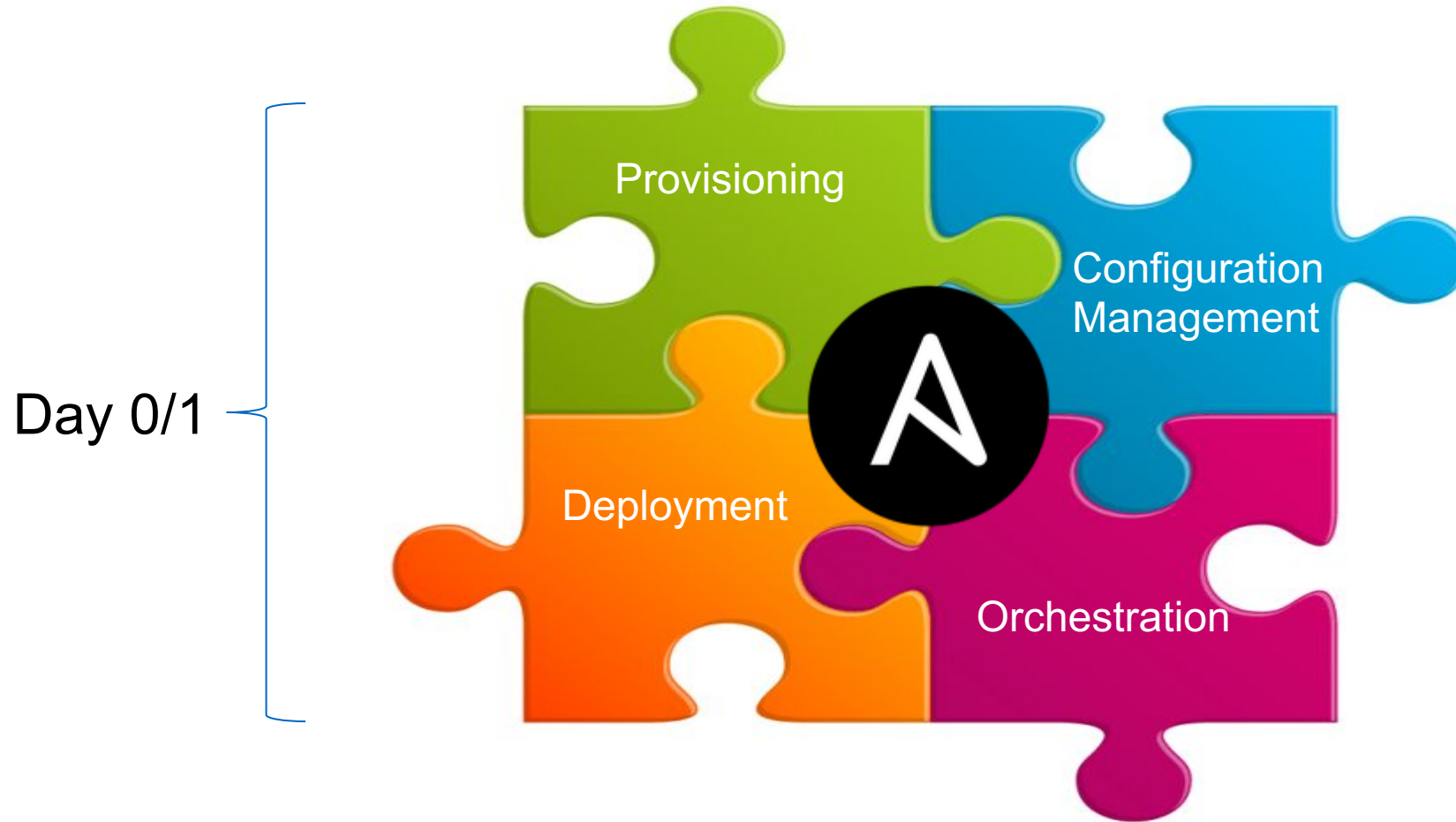# Kubernetes Persistent Volumes

Demo Trident
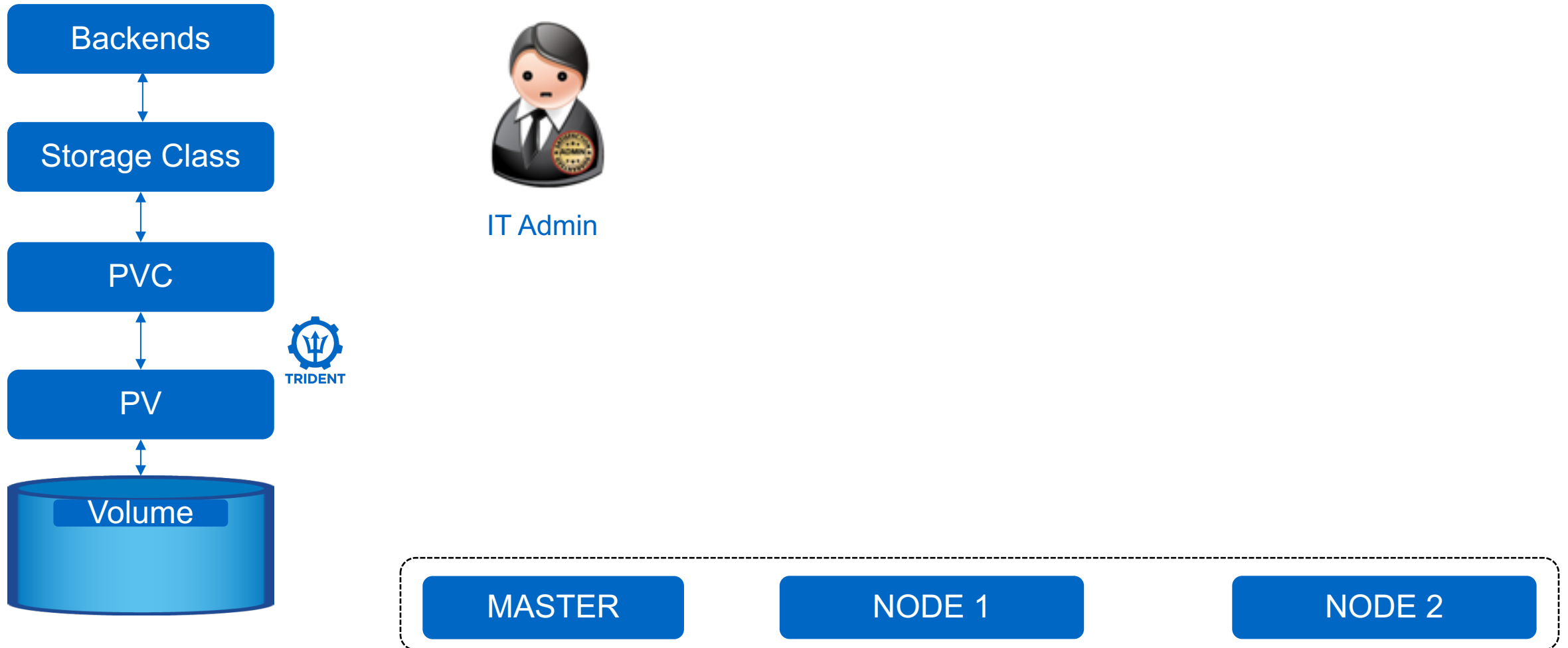
NetApp

Kubernetes demo

Backends

Storage Class

PVC

TRIDENT

PV

Volume

MASTER   NODE 1   NODE 2

NetApp
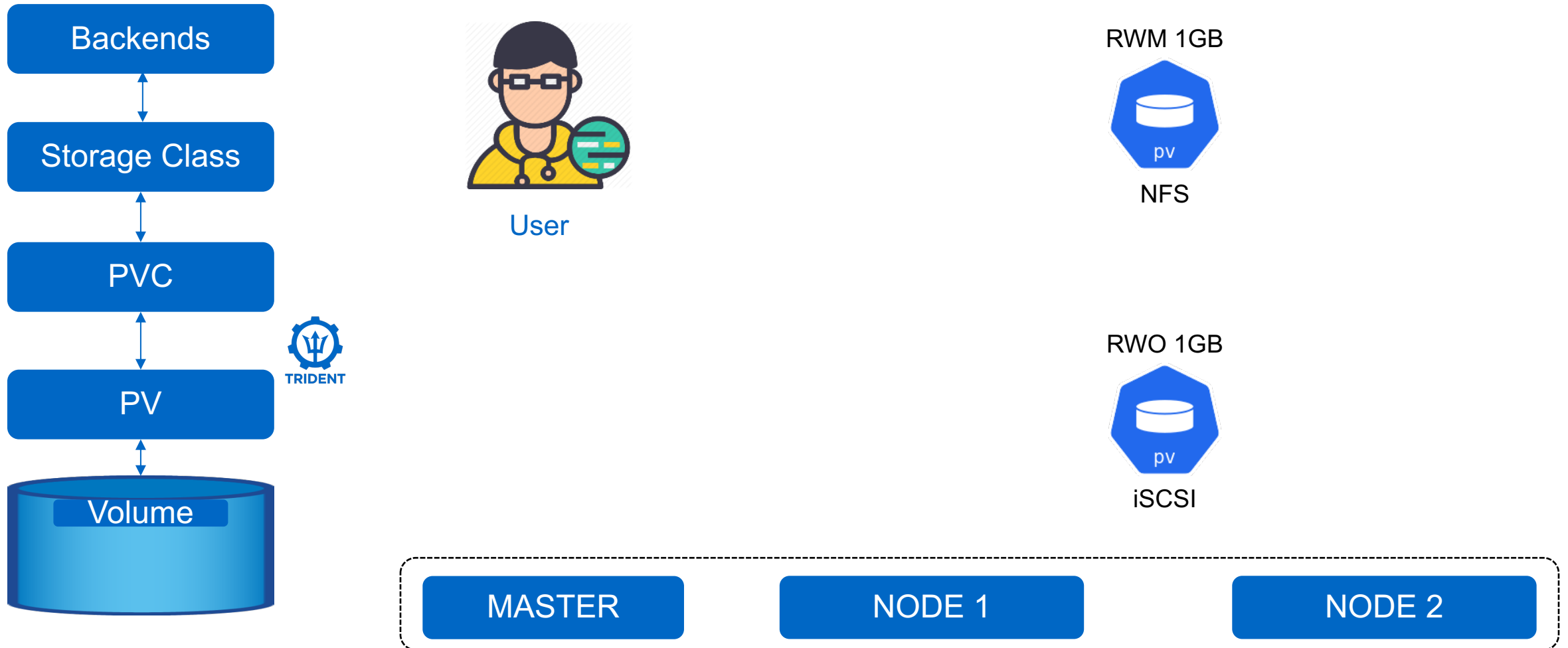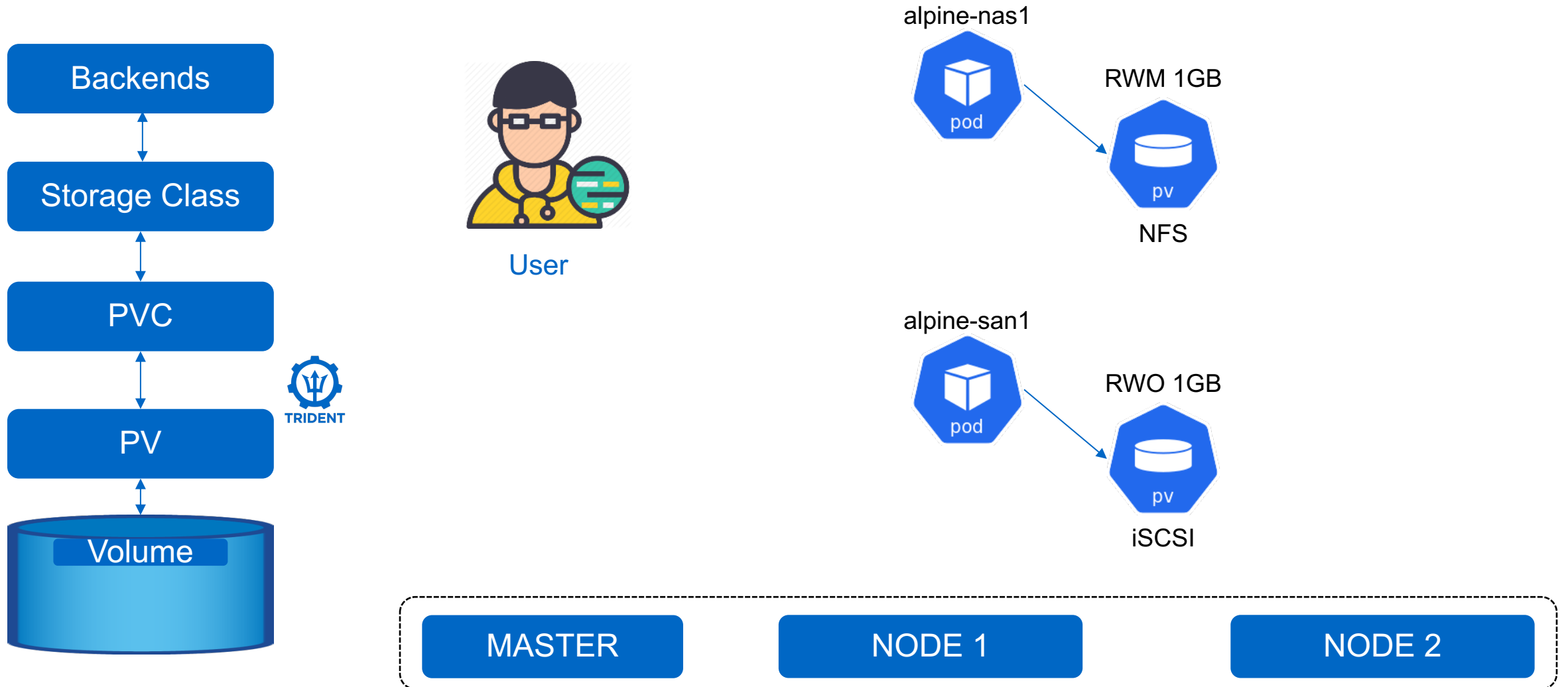
Ansible

Day 0/1

Provisioning

Configuration Management

Deployment

Orchestration

NetApp

Example: Unified storage RWO & RWX

Backends

Storage Class

PVC

PV

TRIDENT

Volume

IT Admin

MASTER   NODE 1   NODE 2

NetApp

Example: Unified storage RWO & RWX

Backends

↕

Storage Class

↕

PVC

↕

PV

↕

Volume

TRIDENT

User

RWM 1GB

pv

NFS

RWO 1GB

pv

iSCSI

| MASTER | NODE 1 | NODE 2 |

NetApp

Example: Unified storage RWO & RWX

Backends

Storage Class

PVC

PV

Volume

TRIDENT

User

alpine-nas1

pod

RWM 1GB

pv

NFS

alpine-san1

pod
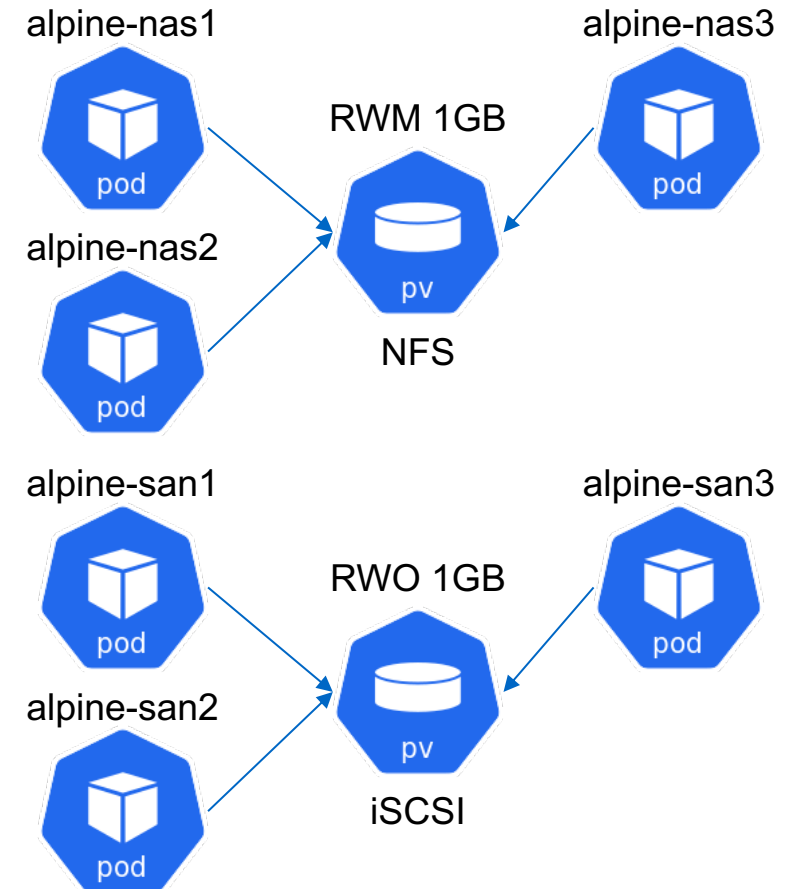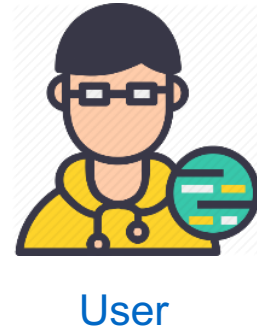
RWO 1GB

pv

iSCSI
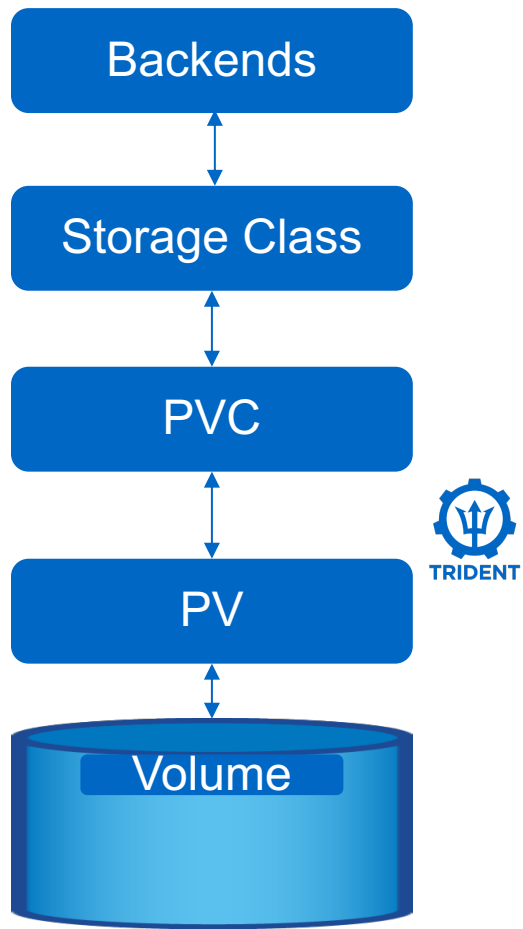
MASTER   NODE 1   NODE 2

NetApp

Example: Unified storage RWO & RWX

Example: Unified storage RWO & RWX
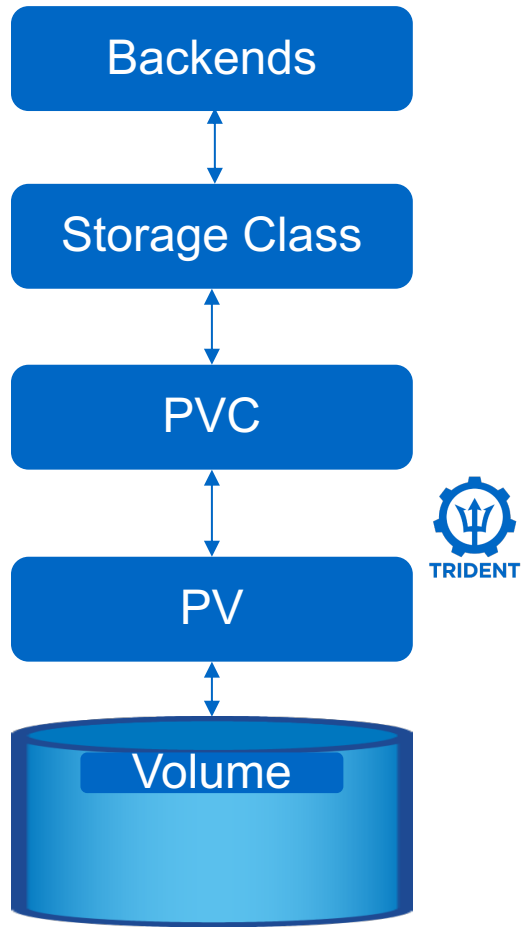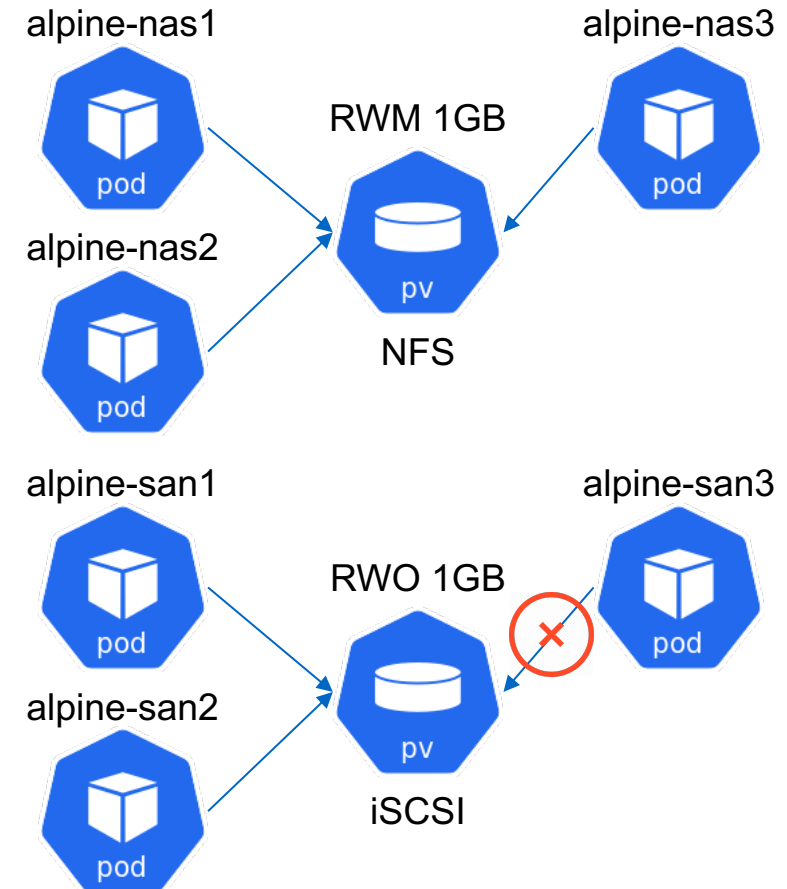
Backends
Storage Class
PVC
PV
Volume

TRIDENT

User

alpine-nas1   alpine-nas3
pod   RWM 1GB   pod
alpine-nas2
pod   pv
NFS

alpine-san1   alpine-san3
pod   RWO 1GB   pod
alpine-san2
pod   pv
iSCSI

MASTER   NODE 1   NODE 2

■ NetApp

Example: Unified storage RWO & RWX

Backends

Storage Class

PVC

PV

Volume

TRIDENT

User
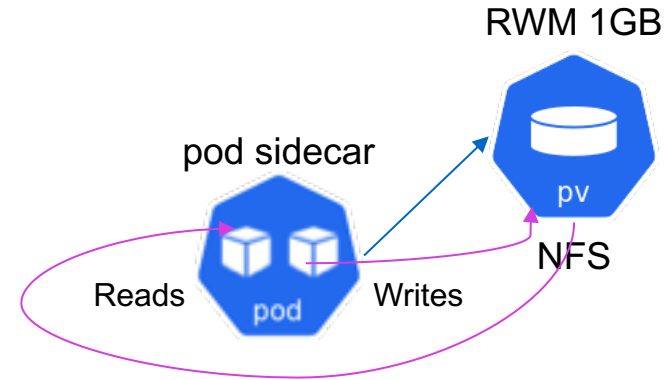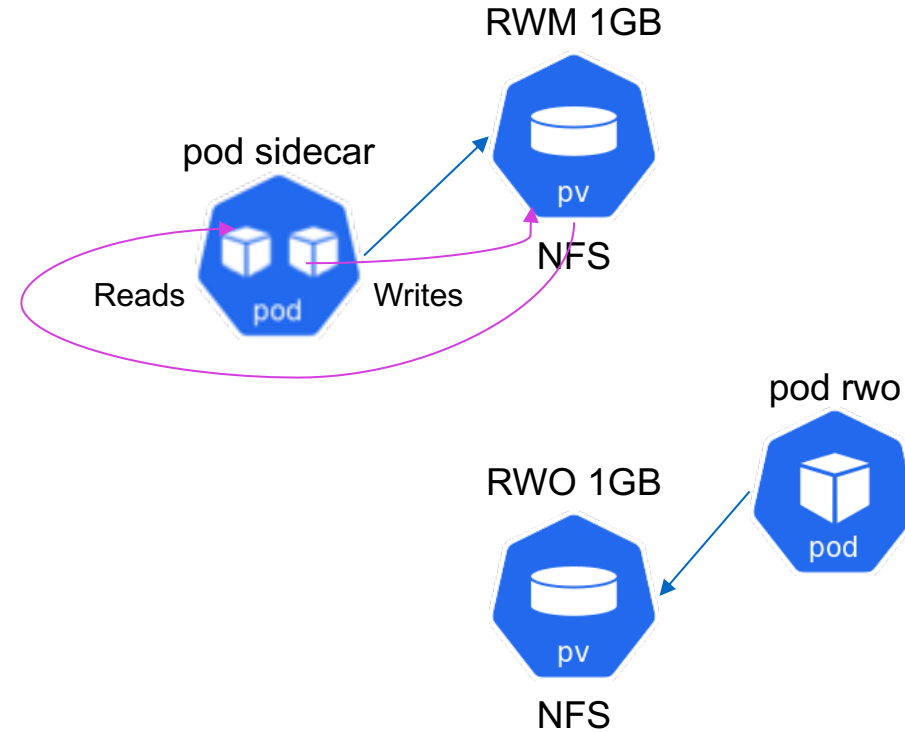
pod sidecar

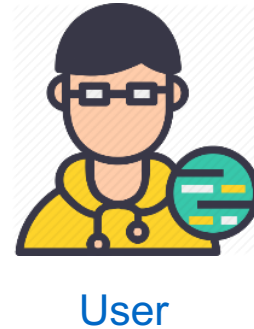RWM 1GB

pv

Reads   Writes   NFS

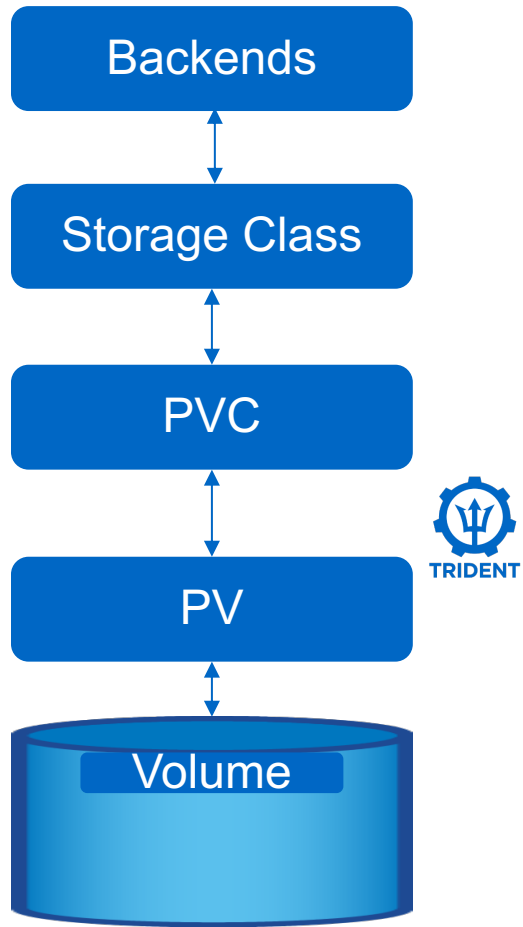MASTER   NODE 1   NODE 2
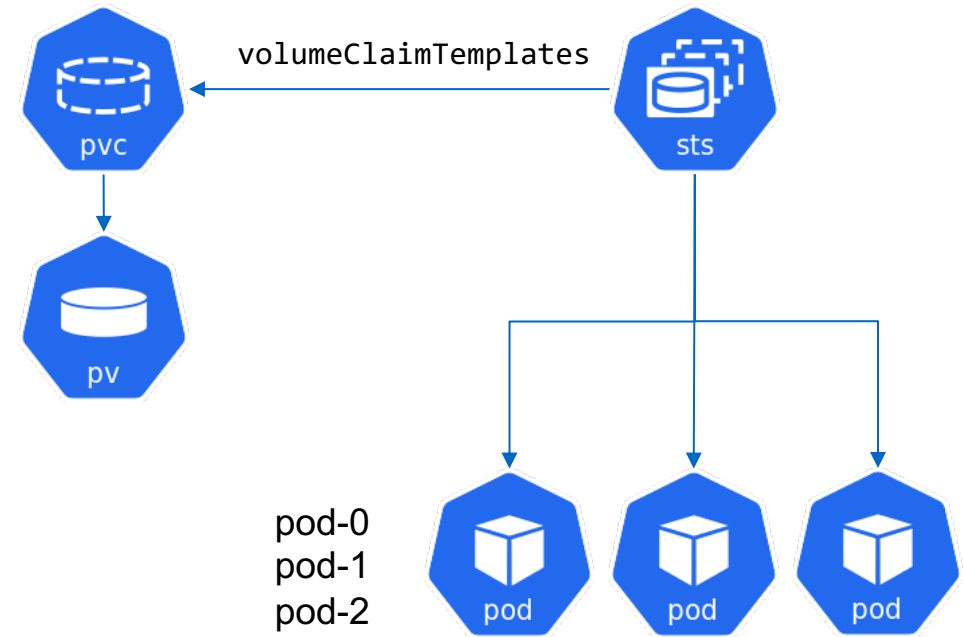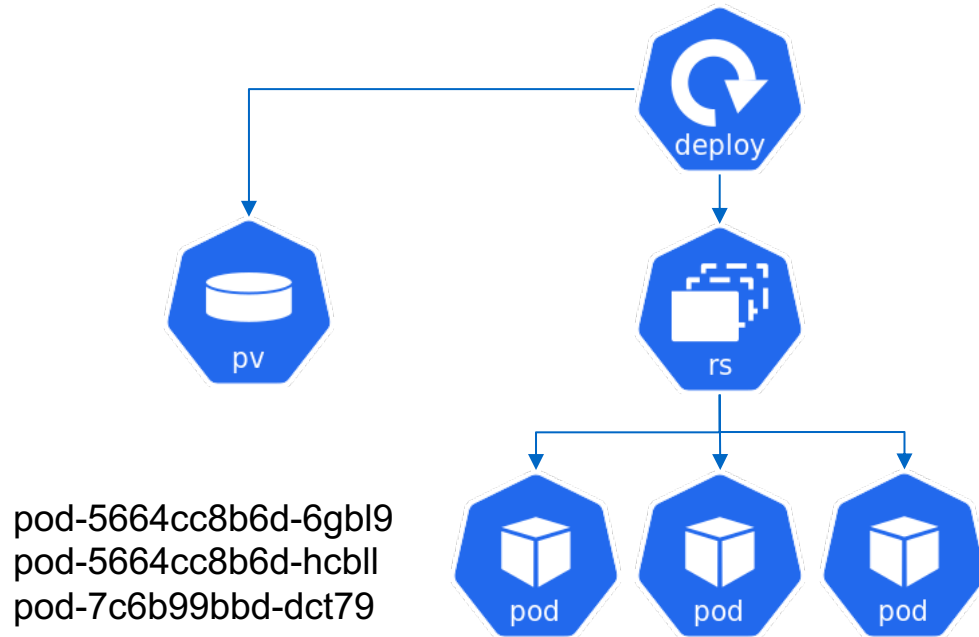
NetApp

Example: Unified storage RWO & RWX

Backends

Storage Class

PVC

PV

Volume

TRIDENT

User

pod sidecar

RWM 1GB

pv

Reads   Writes

NFS

pod rwo

RWO 1GB

pv

pod

NFS

MASTER   NODE 1   NODE 2

NetApp

New tier application architecture with Kubernetes

https://github.com/GoogleCloudPlatform/microservices-demo
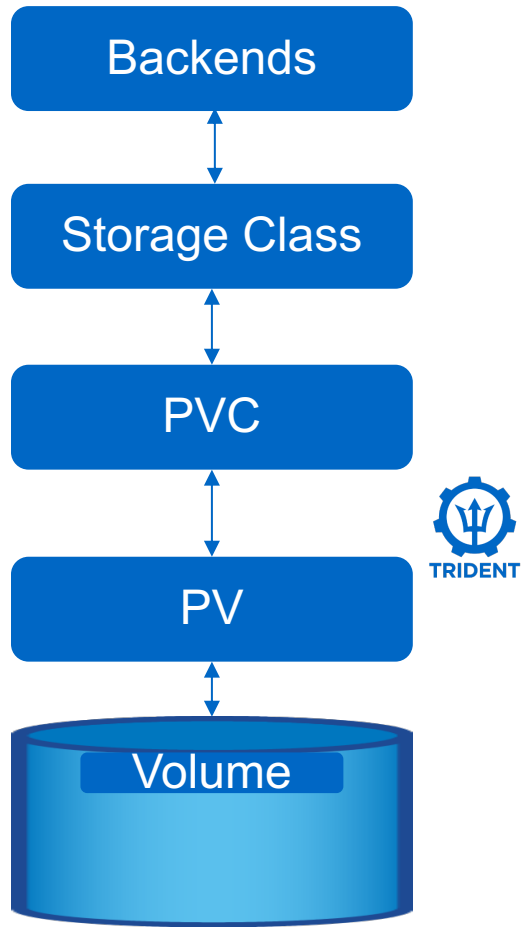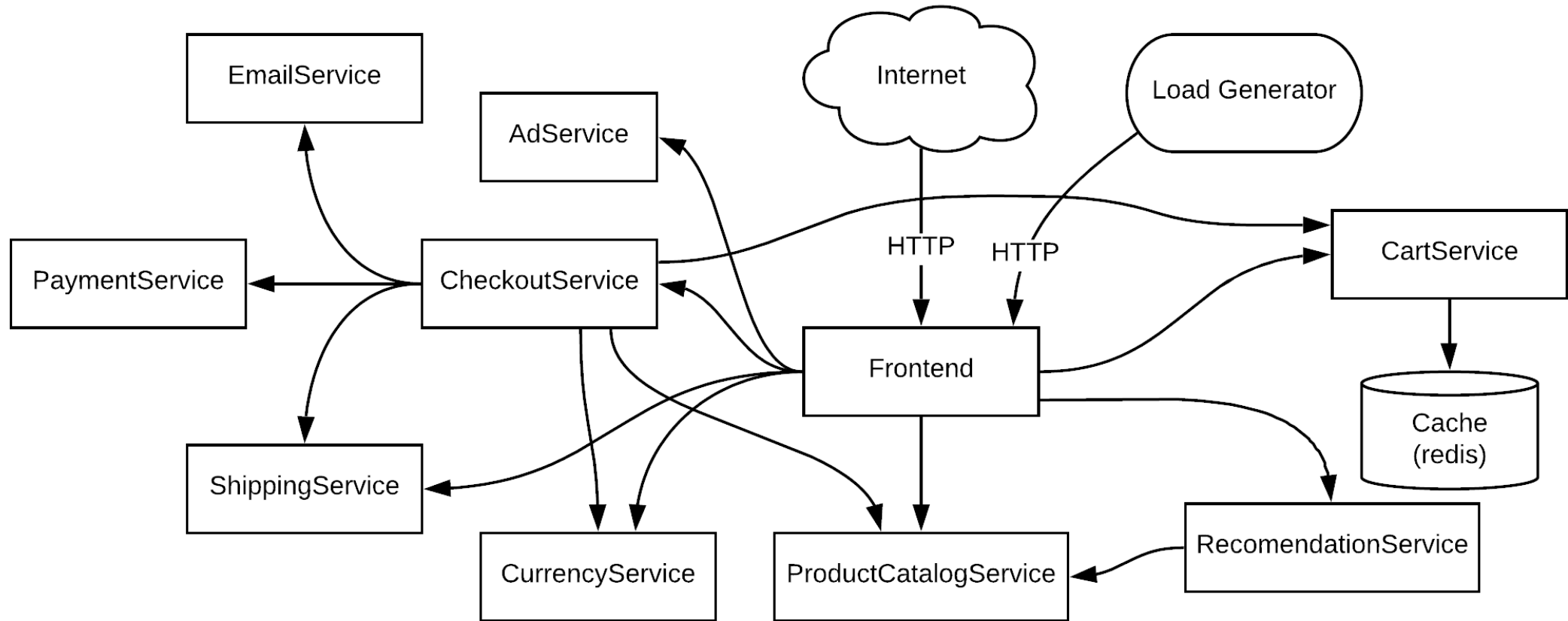
Kubernetes controllers: Deployment vs StatefulSet

pod-5664cc8b6d-6gbl9
pod-5664cc8b6d-hcbll
pod-7c6b99bbd-dct79

volumeClaimTemplates

pod-0
pod-1
pod-2

Canary Deployment:
- Recreate
- RollingUpdate

MASTER   NODE 1   NODE 2

NetApp

New tier application architecture with Kubernetes

NGINX

Frontend Service

mongoDB.

Backend Service

NetApp

New tier application architecture with Kubernetes

NGINX

svc → pod, pod, pod → pv

rs ← deploy

ReadWriteMany

Frontend Service

mongoDB

Backend Service

TRIDENT   OPENSHIFT

NetApp

New tier application architecture with Kubernetes

Frontend Service

Backend Service

ReadWriteMany
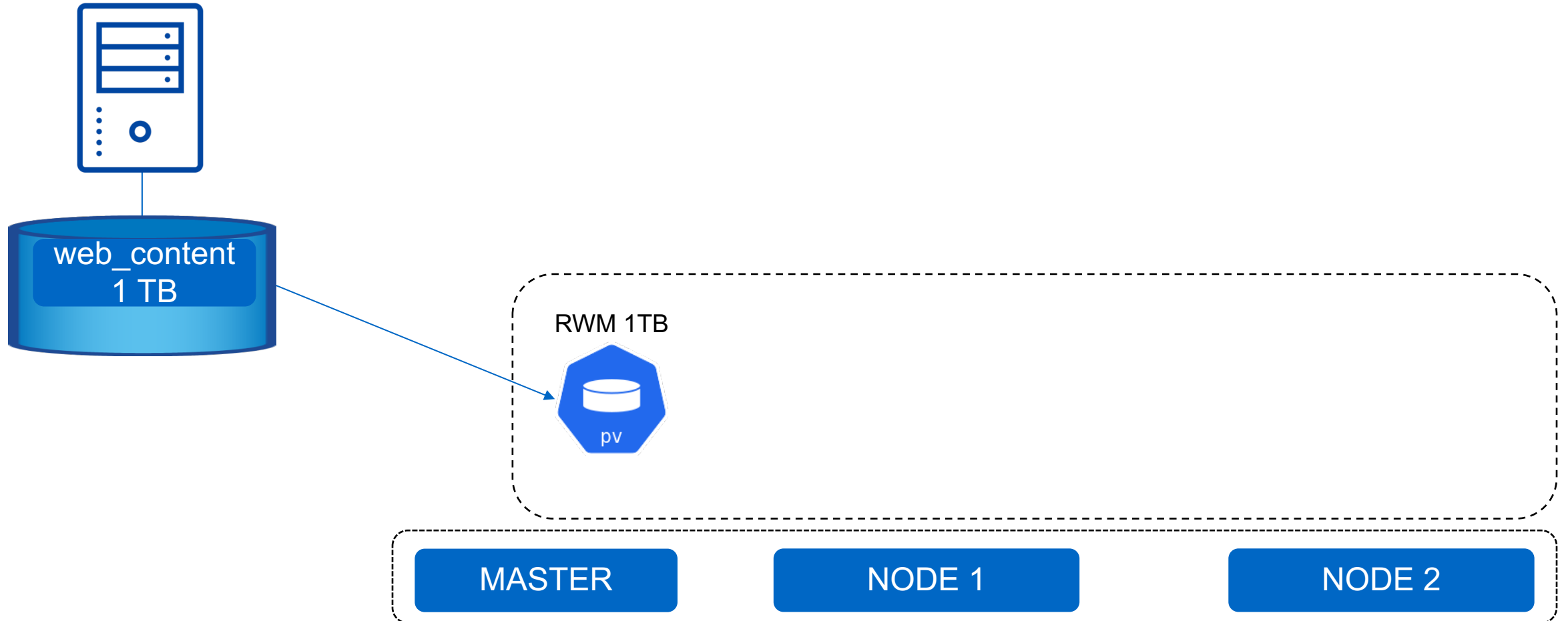
ReadWriteOnce
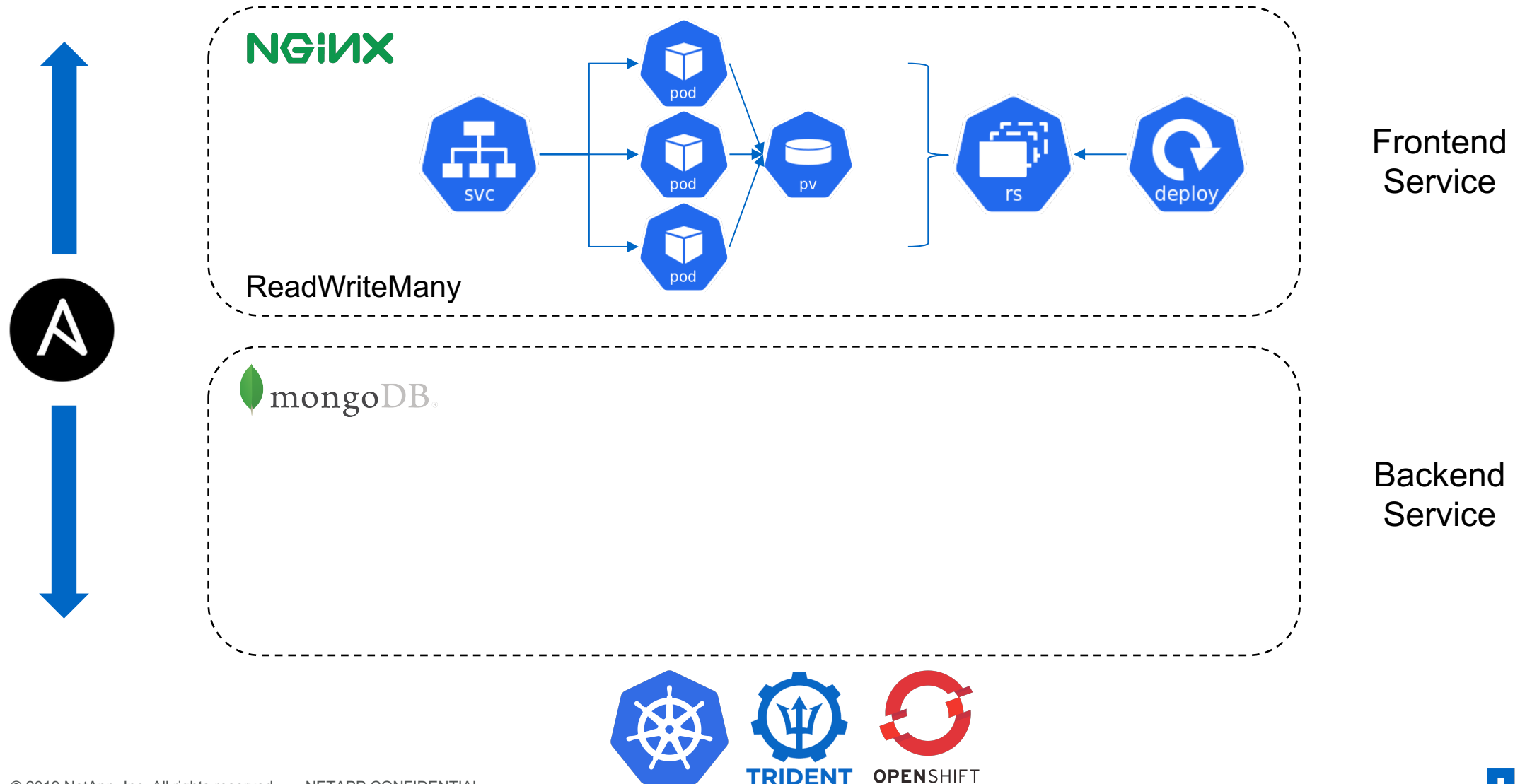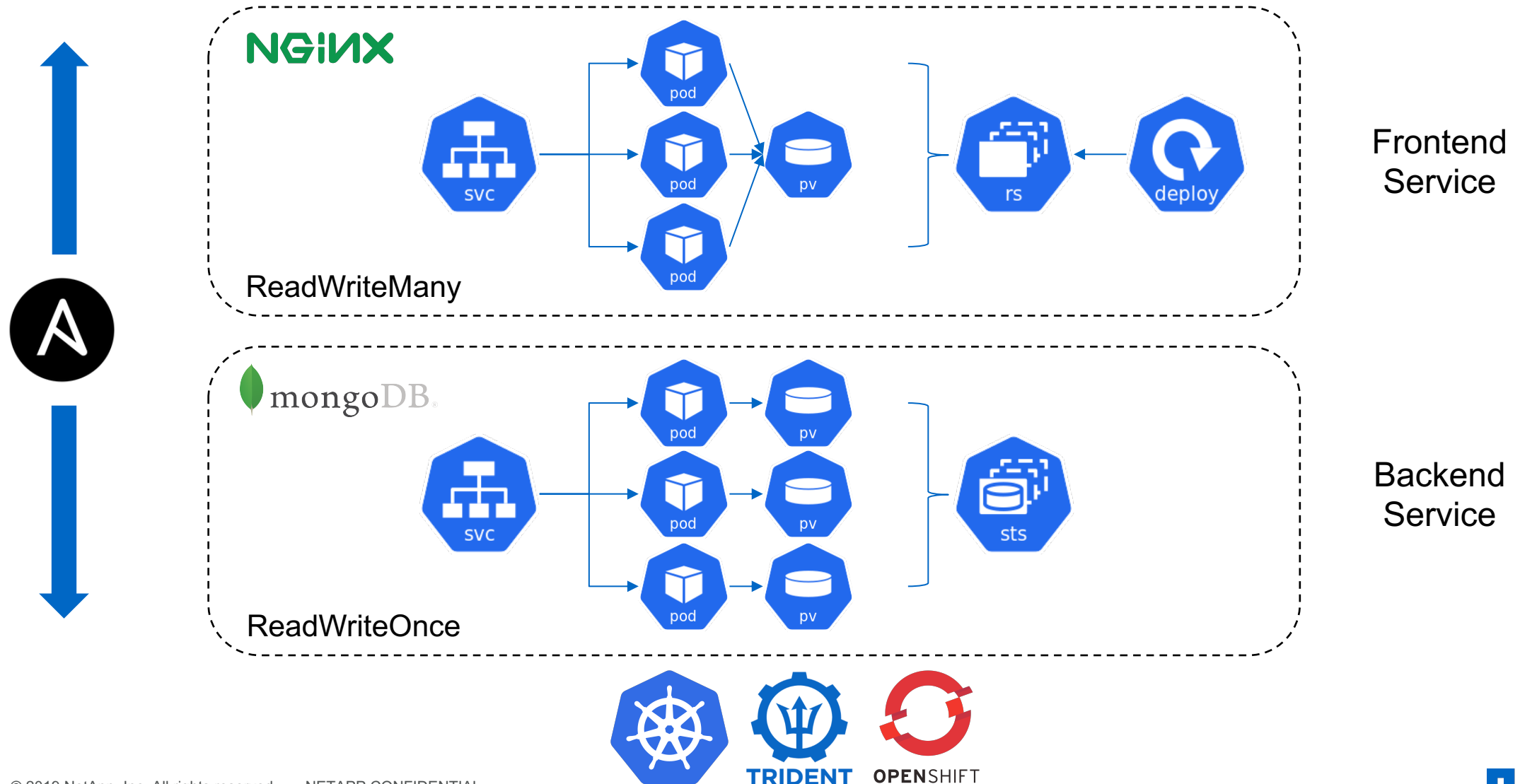
Volume Import

Use cases:

- Migrate existing monolithic applications into containers

- Volume migration – Migrate your data from one Kubernetes cluster to another

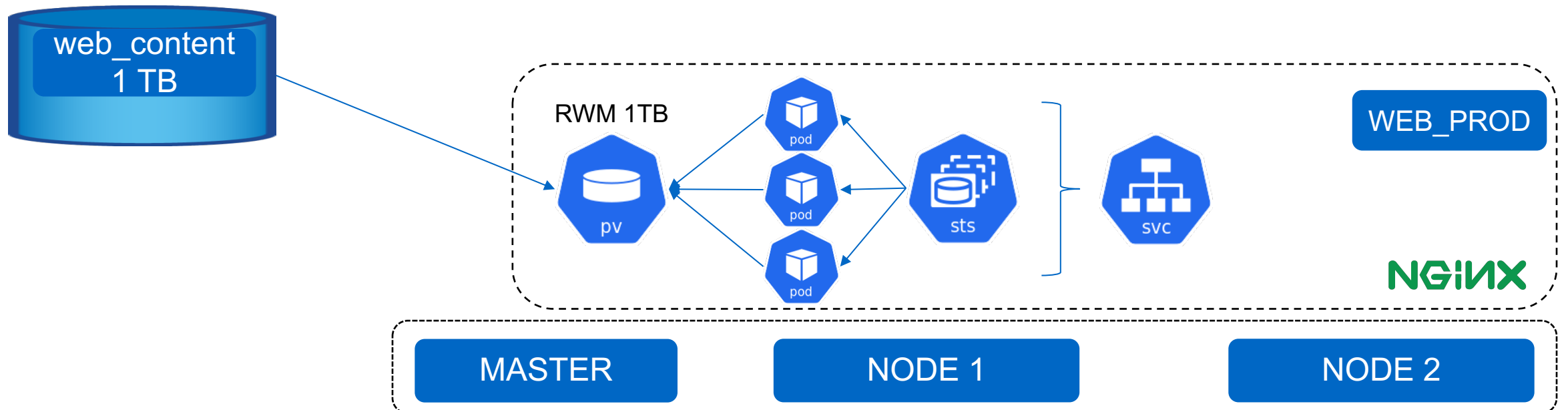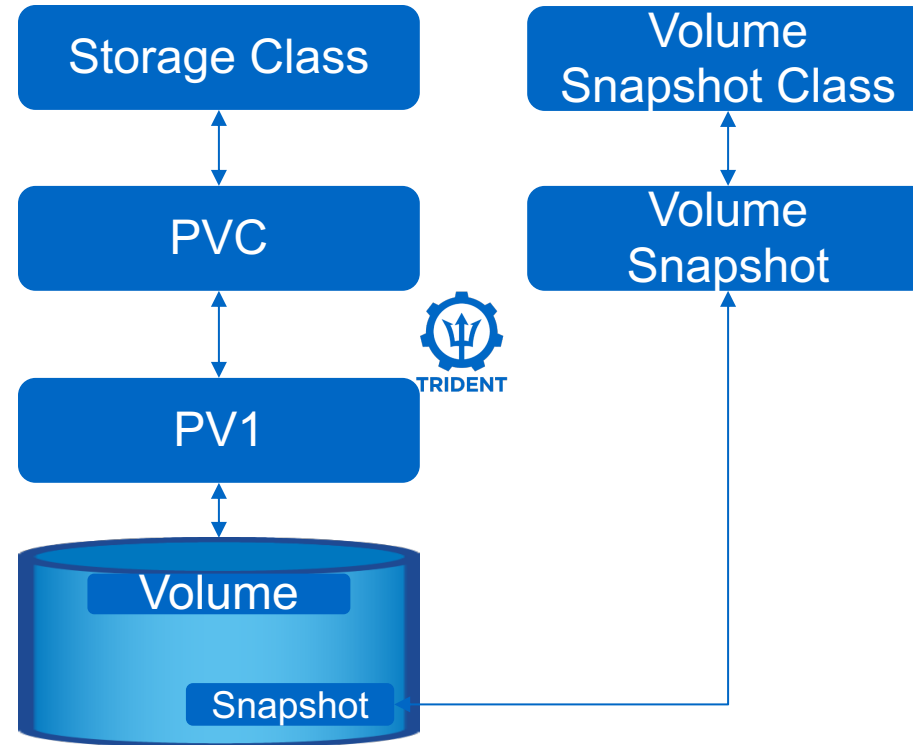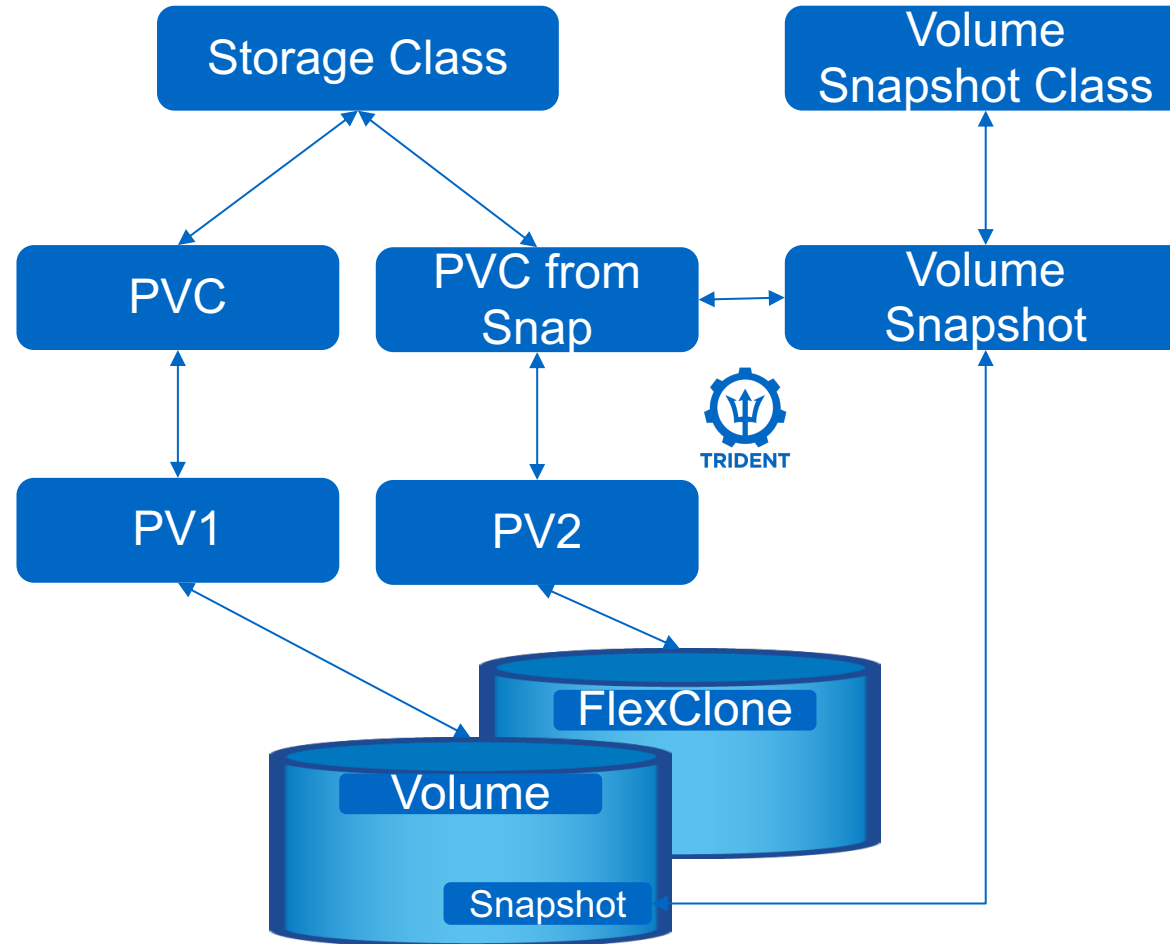- Kubernetes re-build

- Data Management disaster recovery

Trident-Managed

NetApp

Volume Import

NetApp

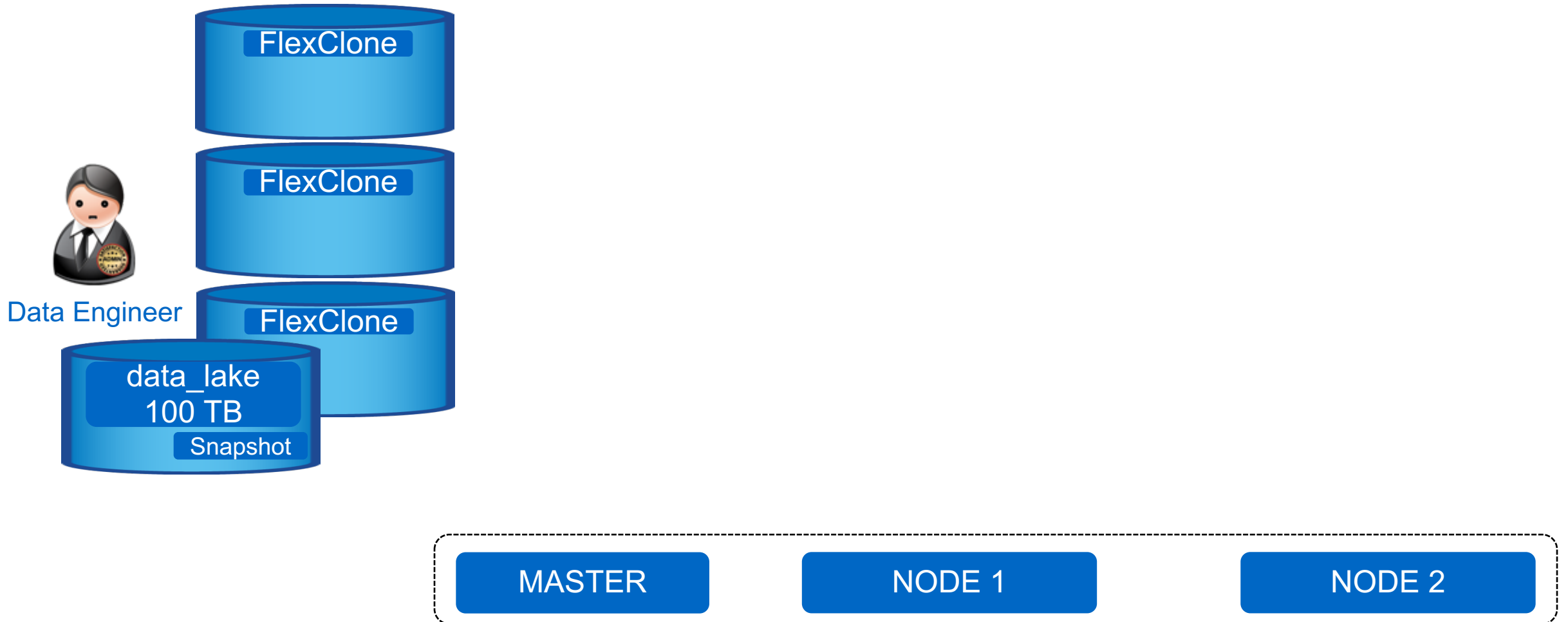# Volume Import

NetApp
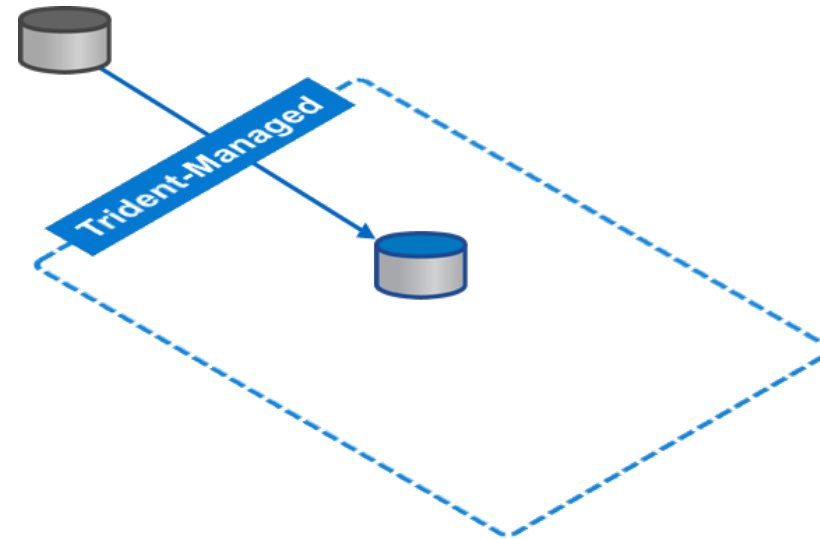
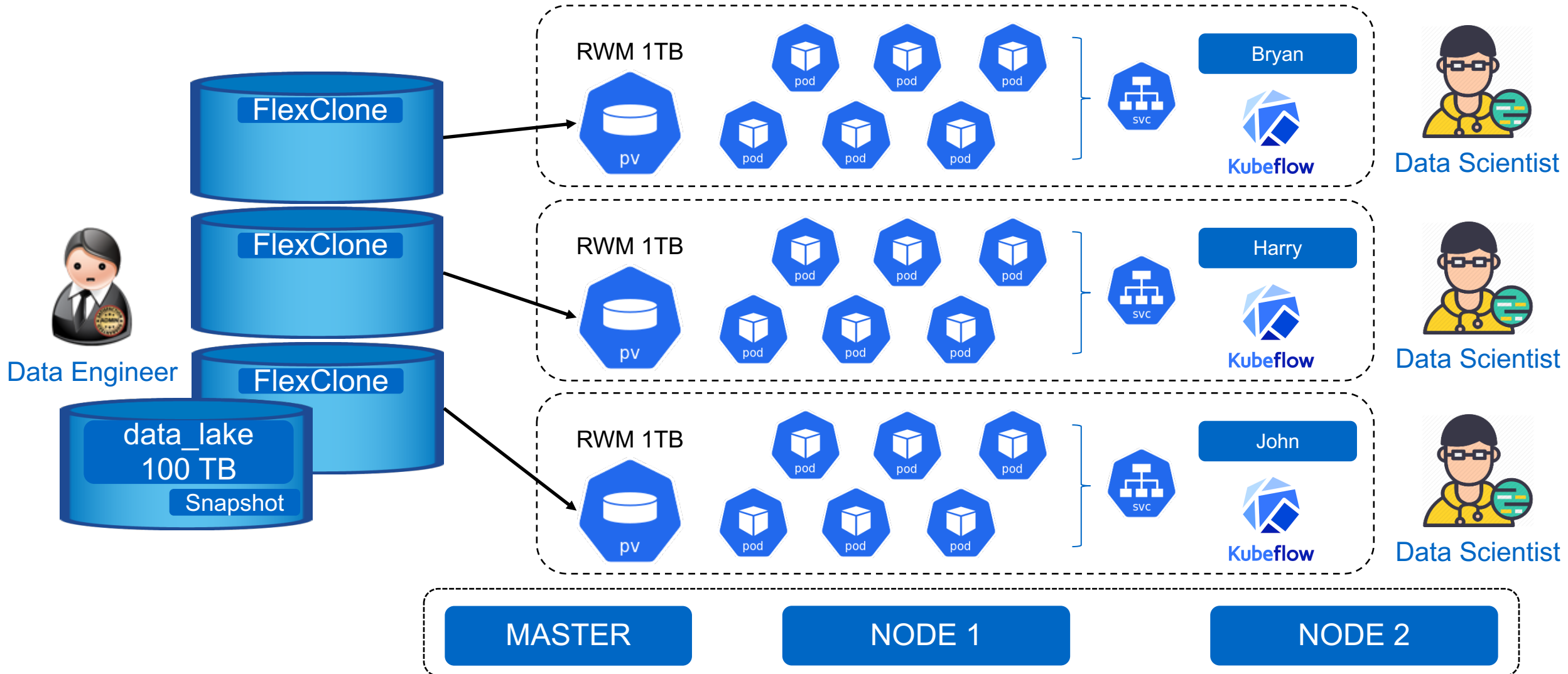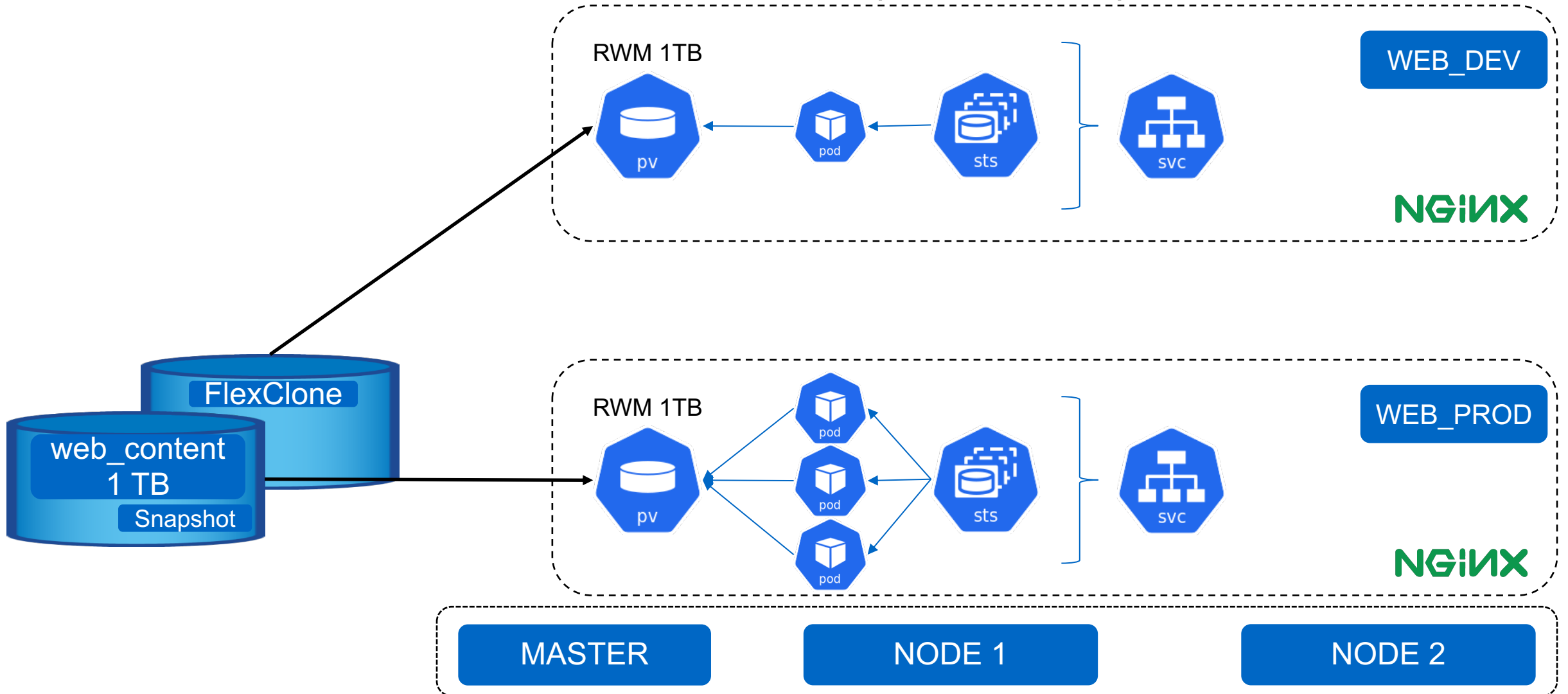# Kubernetes CSI Snapshot

NetApp

Kubernetes CSI PVC from Snapshot (aka Clone)

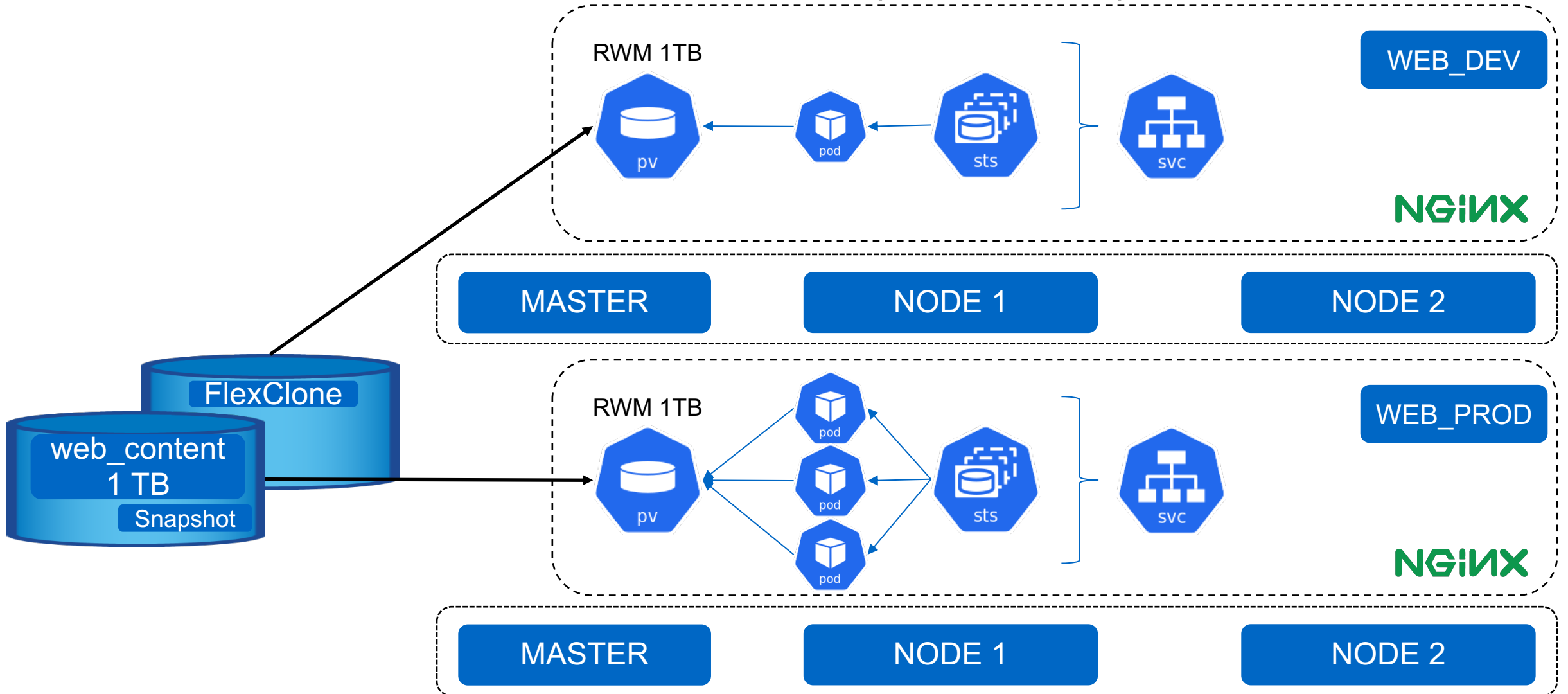# Kubernetes CSI PVC from Snapshot (aka Clone)

Kubernetes CSI PVC from Snapshot (aka Clone)
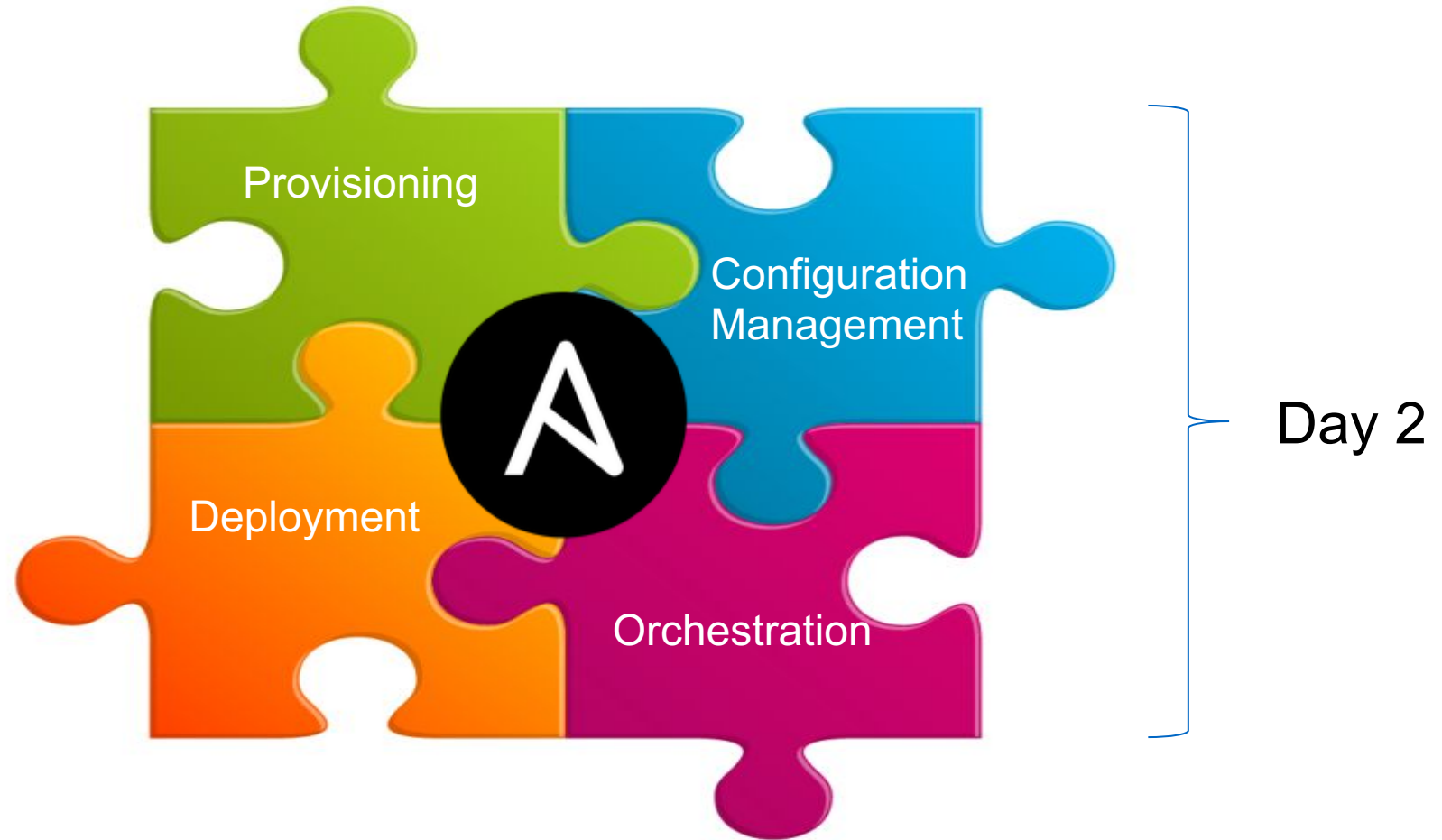
Kubernetes CSI PVC from Snapshot (aka Clone)

Kubernetes CSI PVC from Snapshot (aka Clone)

Ansible

Summary

© 2019 NetApp, Inc. All rights reserved. — NETAPP CONFIDENTIAL —