

# How we run stateful services for customers in Kubernetes

# Who Am I

- Senior Software Developer in Pure Storage
- Go Meetups Prague organizer
- Co-host in Podcast: "You Build it, you run it" (CZ)
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# Content

- Stateful apps in K8S
- How we are doing Portworx Data Services (PDS)
- PDS Demo
- Architecture of our K8S solution

# Stateless vs Stateful

# Stateful

What is a Stateful Application in Kubernetes?

→ stateful applications store data in persistent disk storage

# Stateful set

- StatefulSets are valuable for applications that require one or more of the following.
  - Stable, unique network identifiers.
  - Stable, persistent storage.
  - Ordered, graceful deployment and scaling.
  - Ordered, automated rolling updates.
  - Limitations

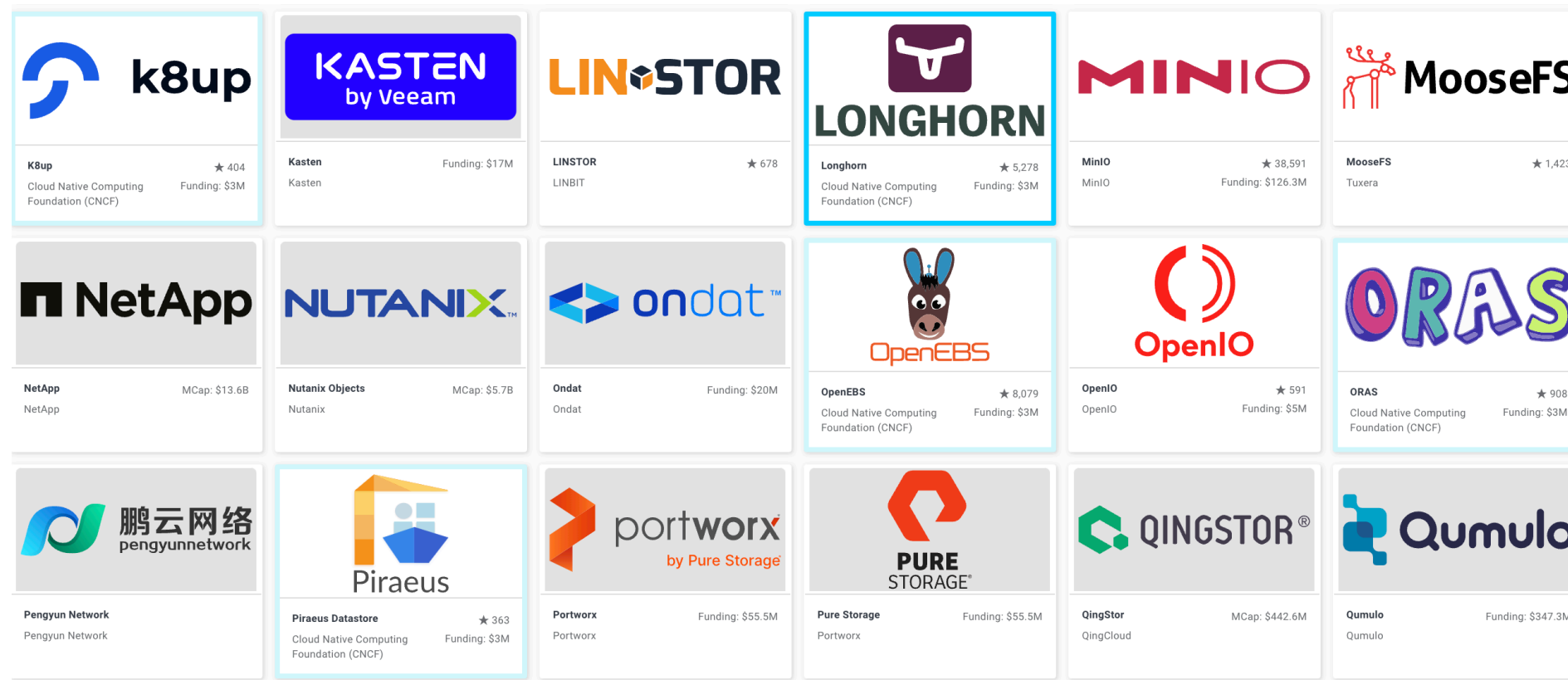
# Storage class

```
kind: StorageClass
apiVersion: storage.k8s.io/v1
metadata:
  name: portworx-sc-db
provisioner: kubernetes.io/portworx-volume
parameters:
  repl: "3"
  io_profile: "db"
```

- PersistentVolumeClaim (PVC) – use storage class
- PersistentVolume (PV) – use PVC

# Storage in K8S

- Cloud Native Storage Landscape
- Container Storage Interface (CSI) Portworx CSI





# Portworx

- Failover across nodes/racks/AZ
- Multi-writer shared volumes
- Local data center replication for HA
- Autoscaling
- Autopilot for Capacity Management
- Encryption, RBAC, storage class support BOYK encryption, OIDC
- Local snapshots
- Volume Backup to Cloud
- Multi-site synchronous/asynchronous DR replication

# Portworx Data Services

- Supported different K8S distributions
- EKS, AKS, GKE, VMVare Tanzu, IKS, RKE, OpenShift
- Different Data Services

# Portworx Data Services

Cassandra	Consul	Couchbase
Elasticsearch	Kafka	MongoDB Enterprise
MS SQL Server	MySQL	PostgreSQL
RabbitMQ	Redis	ZooKeeper

# Portworx Data Services

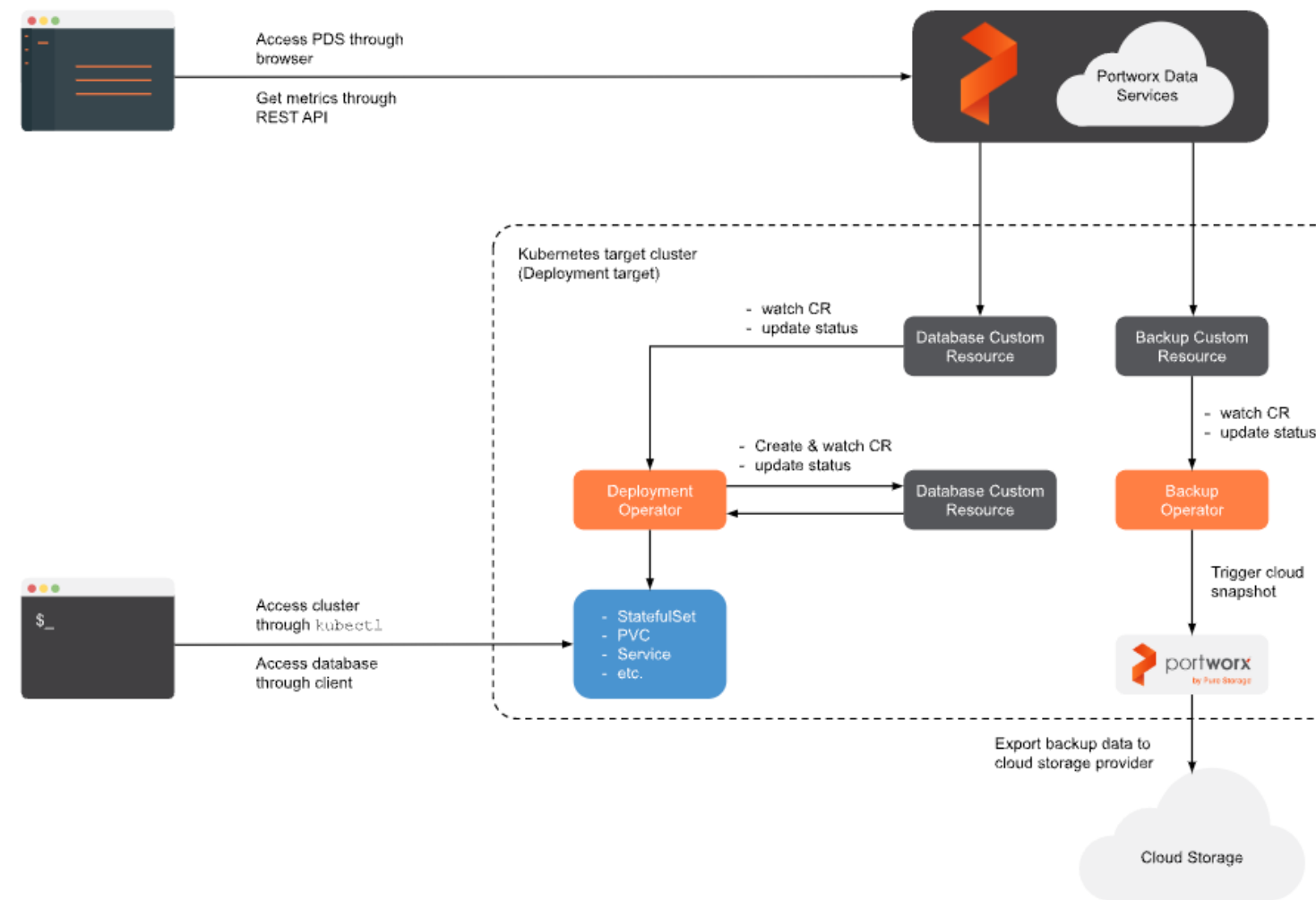
```
helm install \
  --create-namespace \
  --namespace=pds-system \
  pds pds-target \
  --repo=https://portworx.github.io/pds-charts
  --version=1.16.1 \
  --set tenantId=<tenantId> \
  --set bearerToken=<token> \
  --set apiEndpoint=<api-endpoint>
```

# Portworx Data Services



## DEMO

# PDS Architecture



# Questions



# Attention to all DevOps Community!

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