Rook:
Running Ceph using Kubernetes

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https://rook.io/
https://github.com/rook/rook
About us

Kim-Norman Sahm  
Cloud Evangelist

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Rook Maintainer + DevOps Engineer
Agenda

- What is Rook?
- Architecture
- Kubernetes Native Integration
- Configuring Ceph
- Demo
What is Rook?

- Operator for running Storage in Kubernetes
  - Extends Kubernetes with custom types
  - Automation for Deployment, Scaling, Upgrading, etc for the Storage.
- Framework for many storage providers / solutions
  - Common Types for, e.g., Storage Selection shared
- Open Source (Apache 2.0)
- Hosted by CNCF
Architecture
New Objects:
- Ceph Cluster
- Ceph BlockPool
- Ceph Object Store
- Ceph Filesystem
- Volume

Objects:
- RBAC
- Deployments (Pods)
- Services
- ConfigMaps & Secrets
- StorageClass / PV / PVC

Rook Ceph Operator

Management & Health API

Rook Discover

Rook Agent

Kubelet (Node)

Rook Flex Volume / CSI

Disks

Objects in Kubernetes API

- RBAC
- Deployments (Pods)
- Services
- ConfigMaps & Secrets
- StorageClass / PV / PVC
Sir Sir Redundancy
Kubernetes Native Integration
apiVersion: storage.k8s.io/v1
kind: StorageClass
metadata:
  name: rook-block
  namespace: rook
provisioner: rook.io/block
parameters:
  pool: replicapool
  clusterName: rook
PersistentVolumeClaim

```yaml
apiVersion: v1
class: PersistentVolumeClaim
metadata:
  name: wp-pv-claim
labels:
  app: wordpress
spec:
  storageClassName: rook-block
  accessModes:
  - ReadWriteOnce
  resources:
    requests:
      storage: 20Gi
```
Results in..
Storage for Application
20 Gigabyte
Sir Sir Redundancy
Configuring Ceph
storage:
  useAllNodes: true
  useAllDevices: true
deviceFilter:
location:
  config: [...]

config:

storeType: bluestore
metadataDevice: "md0"
databaseSizeMB: "1024"
journalSizeMB: "1024"
osdsPerDevice: "1"
encryptedDevice: "true"
nodes:
- name: "k8s-worker01"
directories:
- path: "/rook/storage-dir"
resources:
 limits:
  cpu: "500m"
  memory: "1024Mi"
 requests:
  cpu: "500m"
  memory: "1024Mi"
nodes:

- name: "k8s-worker02"

devices:

- name: "sdb"
- name: "nvme01"

cfg:

  - osdsPerDevice: "5"

cfg:

  - storeType: filestore

- name: "k8s-worker03"

deviceFilter: "^sd."
Let’s deploy a Rook Ceph Cluster to Kubernetes cluster.

Environment:
- Cloud Provider: Hetzner Cloud
- Server Type: CX31 with each 2x 500GB volumes
- Kubernetes Nodes: 3x Nodes
How to get involved?

Contribute to Rook - https://github.com/rook/rook
Slack - https://rook-io.slack.com/ #conferences
Twitter - @rook_io
Forums - https://groups.google.com/forum/#!forum/rook-dev
Community Meetings
Questions?

https://github.com/rook/rook

https://rook.io/
Thank you!

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