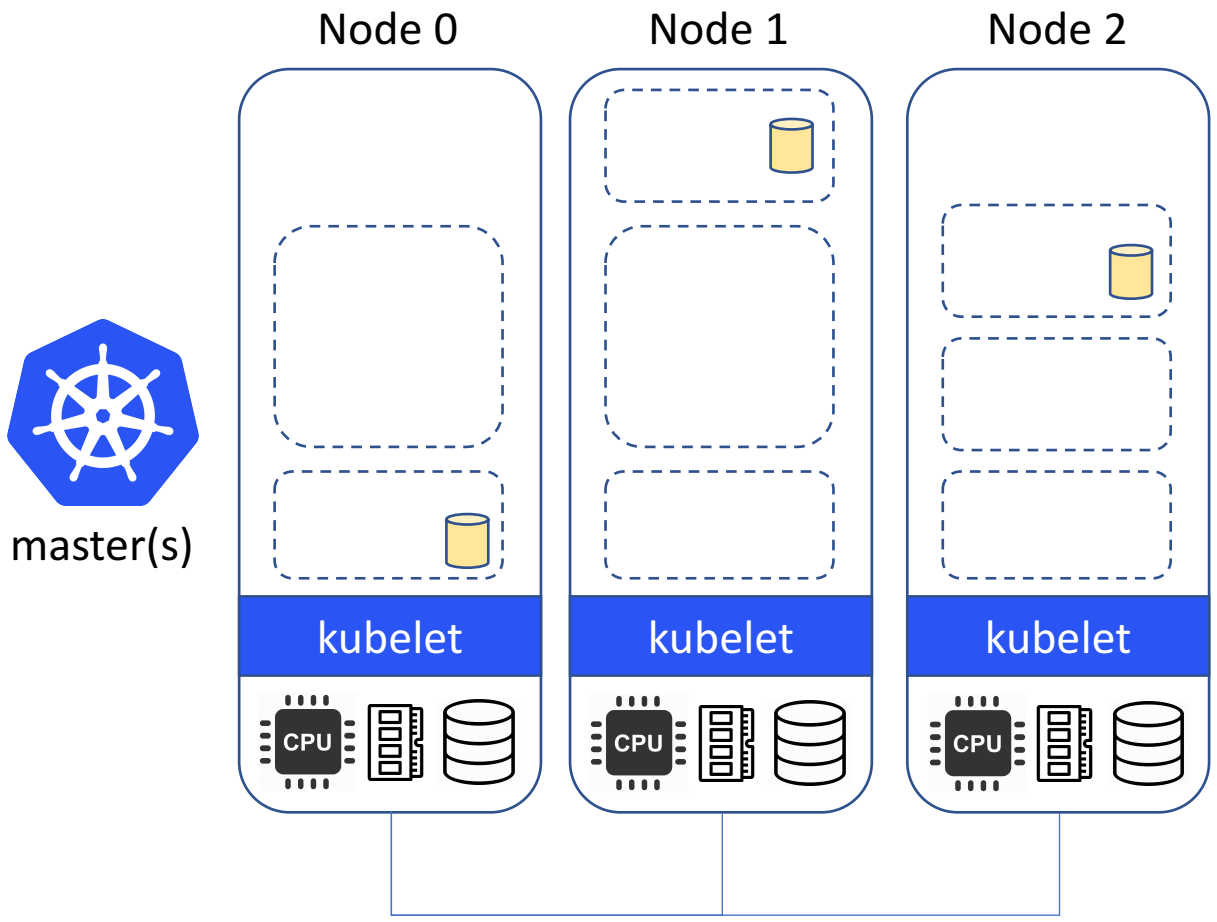
Building a Storage Cluster on-top of Kubernetes

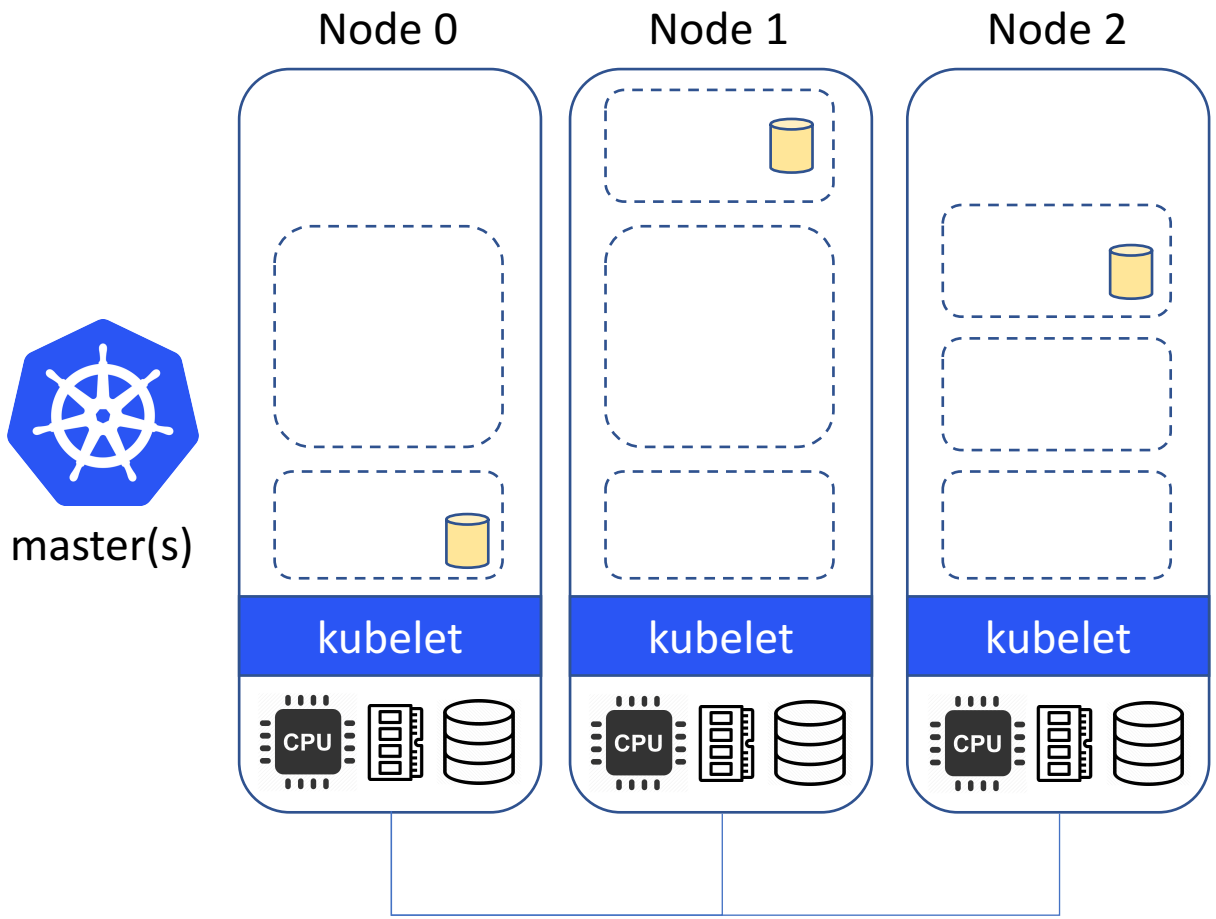
Bassam Tabbara (@bassamtabbara)

CTO @ Quantum Corp.

K8S Cluster with Local Storage



K8S Cluster with External Storage



Dynamic Storage Provisioning

Microsoft Azure

amazon web services

Google Cloud Platform

Cloud

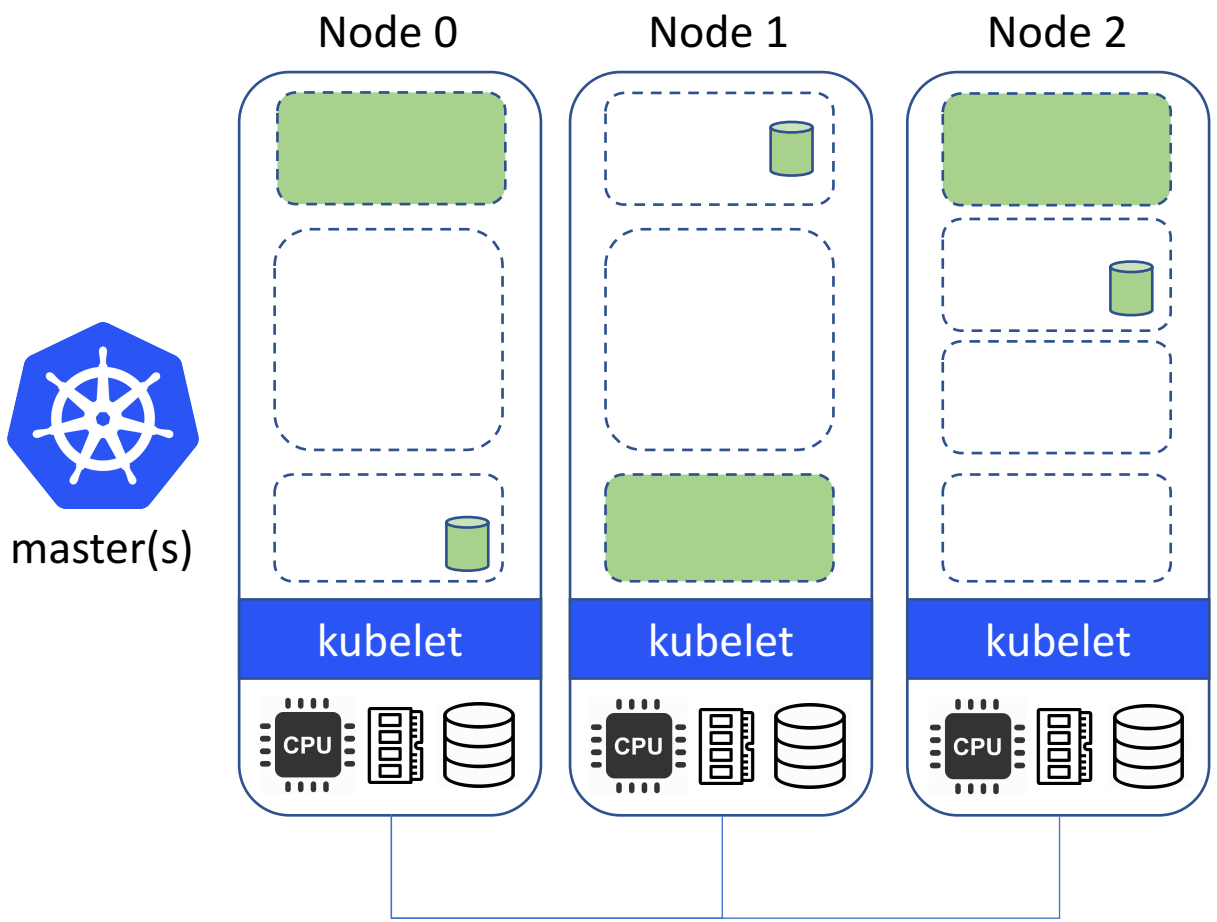
ceph

GLUSTER

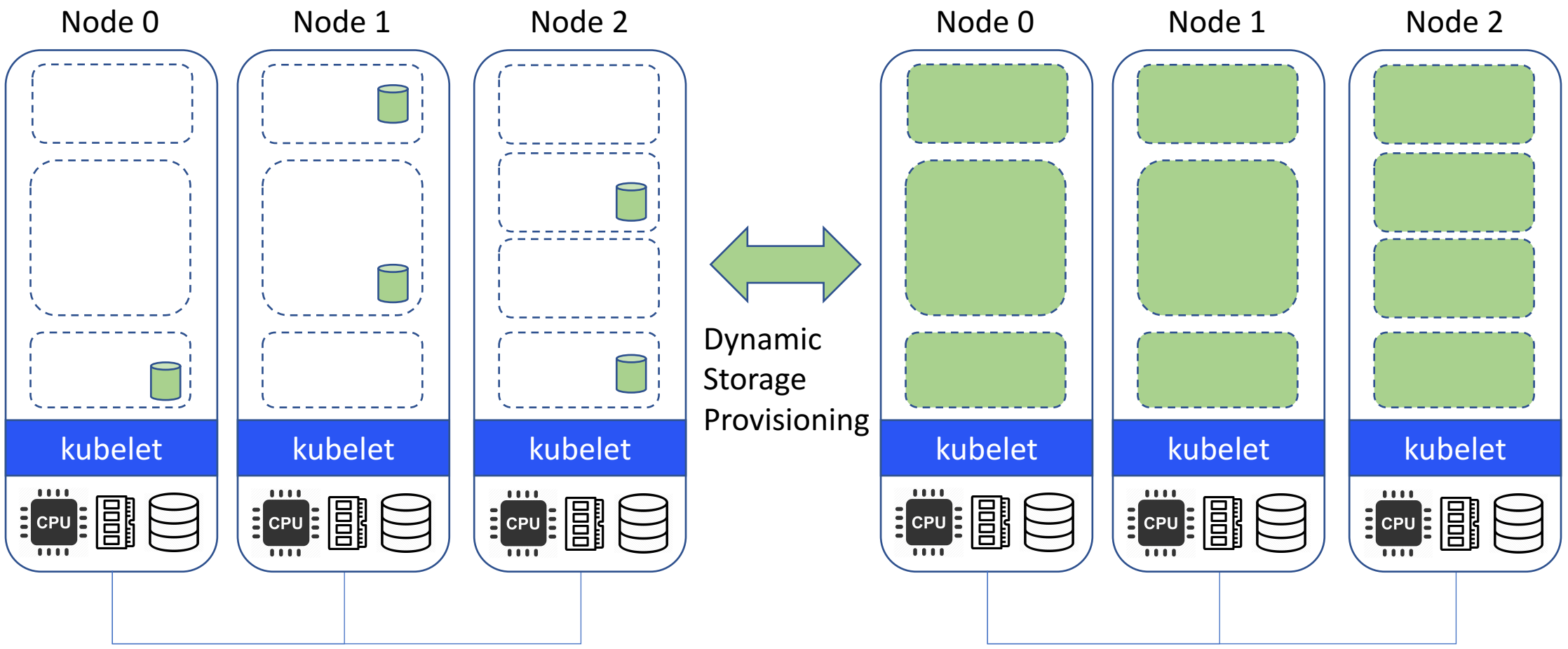
Software Defined Storage

Storage Appliances

K8S with Converged Storage

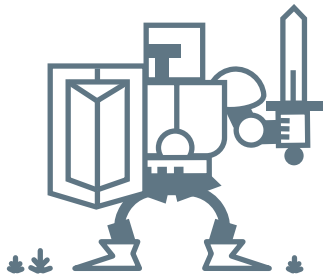


K8S Cluster with External K8S Storage



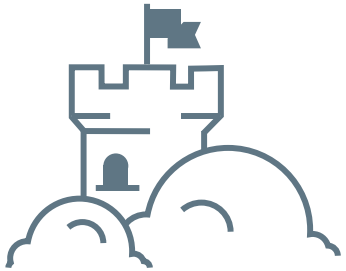
ROOK
Open source file, block and object storage for your cloud-native environment.

What is Rook?



Battle-tested software defined storage

Rook is based on an embedded version of Ceph, which has 10+ years of production deployments and runs some of the worlds largest clusters.



Cloud-native integration

Rook runs as a cloud-native service for optimal integration with applications in need of block, object, or file storage.

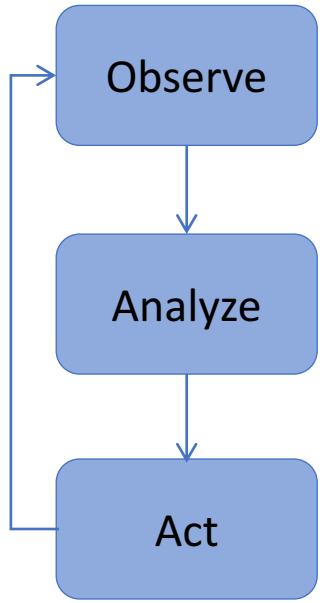
Open Source

Rook is open source software released under Apache 2.0 license. We picked this permissive license to foster our community of developers.

DEMO

Storage Operator

- Defines *desired state* for the storage cluster
  - Implemented as TPRs
  - Extensions to the K8S API
  - TPRs for Cluster, Storage Node, Pool, Object Store, etc.
- The Operator implements a state machine
  - Watches for changes in desired state
  - Watches for changes in the cluster
  - Applies changes to the cluster to make it match desired
- The Operator leverages the full power of K8S
  - Services, ReplicaSets, DaemonSets, Secrets, …
  - Contains all the logic to manage Ceph at scale
  - Handles stateful upgrades
  - Handles rebalancing the cluster
- Not on the data path – can be offline for minutes



More info

- Github: https://github.com/rook/rook
- Web: https://rook.io
- Blog: https://blog.rook.io
- Twitter: @rook_io
- Gitter: https://gitter.im/rook/rook

- Autoscaling a Multi-Platform Kubernetes Cluster Built with kubeadm [I] - Lucas Käldström
  - **Thursday**, March 30 • 14:00 - 14:35
  - http://sched.co/9Tbx