

On-premise cloud with a Kubernetes-native infrastructure

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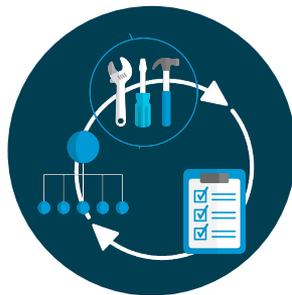
ON-PREMISE I.T. AND APP DEV CHALLENGES



SLOW AND
REACTIVE



HIGH
COSTS



COMPLEX
LEGACY
OPERATIONS

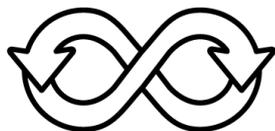


REACTIVE
SECURITY

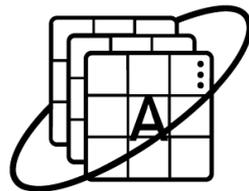


PEOPLE &
PROCESS

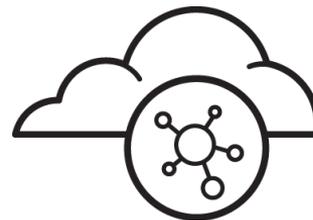
HOW DO I.T. AND DEVELOPERS MOVE FORWARD?



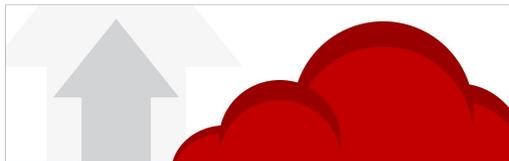
Build a DevOps
culture



Move to
cloud-native app
dev



Operationalize a
secure,
hybrid cloud



—
Enjoy simplicity and agility of public cloud in an on-prem environment



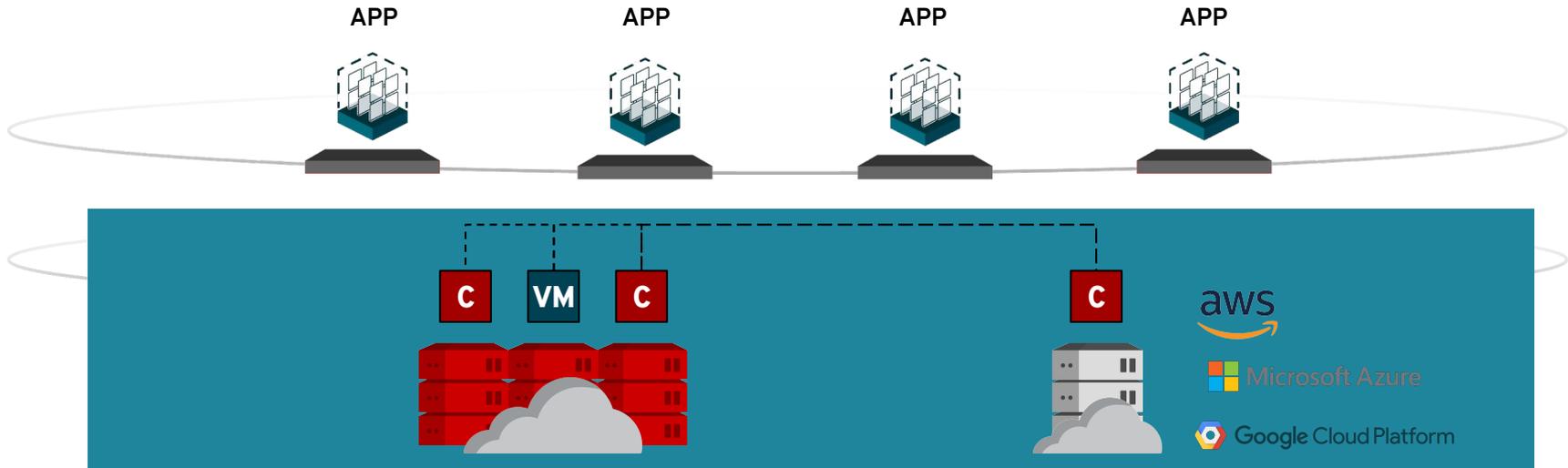
—
Create a consistent experience across public and on-prem



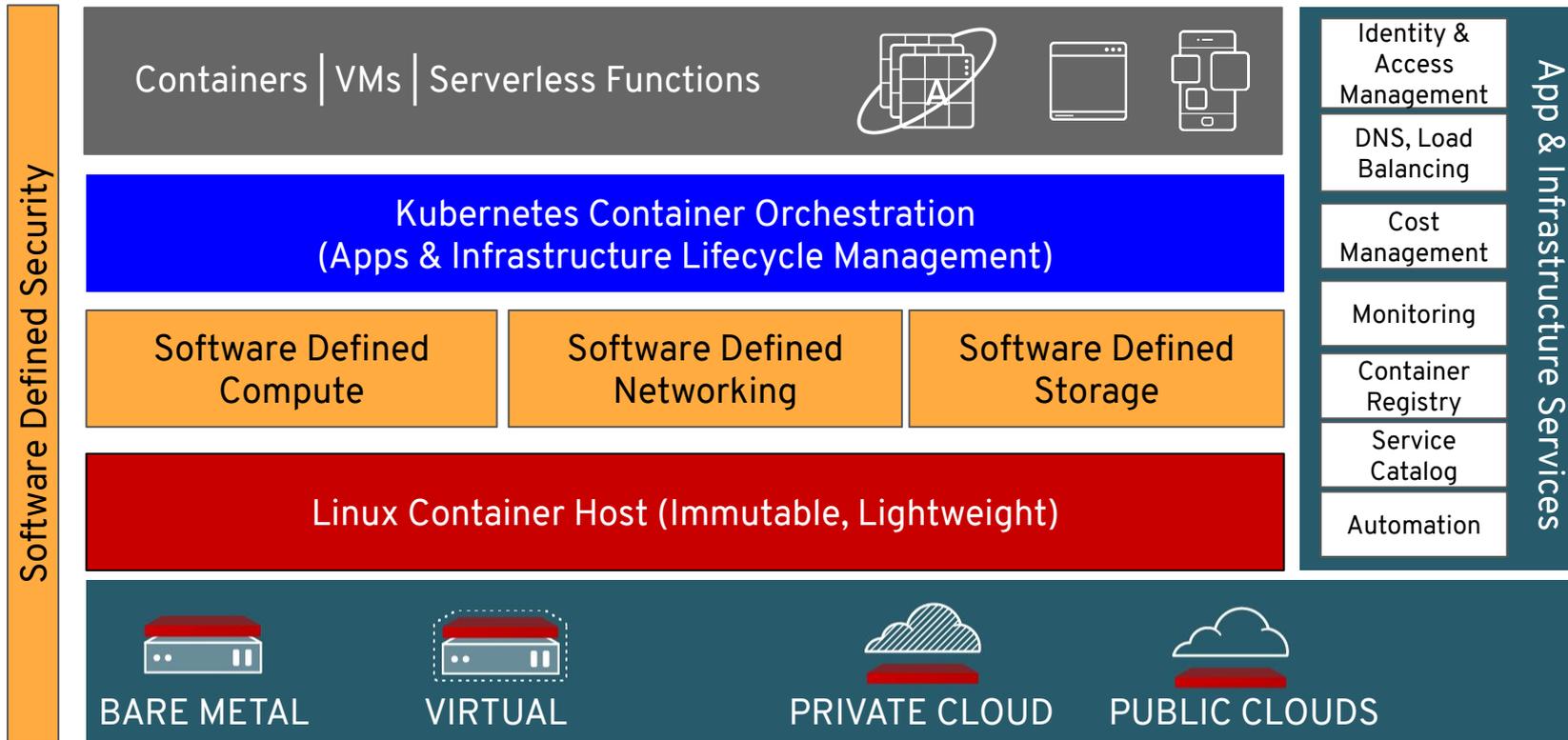
—
Plan for growth in container adoption while still running VMs

KUBERNETES POWERED OPEN HYBRID CLOUD

Gives developers the freedom to innovate faster across on-premise and public clouds



FUNCTIONAL ARCHITECTURE



RED HAT MAKES OPEN HYBRID CLOUD REAL

Containers | VMs | Serverless Functions



Red Hat
OpenShift 4



Red Hat
OpenShift
Container Storage



Red Hat
Enterprise Linux
CoreOS



BARE METAL



VIRTUAL



PRIVATE CLOUD



PUBLIC CLOUDS

KUBERNETES-NATIVE INFRASTRUCTURE

Containers | VMs | Serverless Functions



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BARE METAL



VIRTUAL

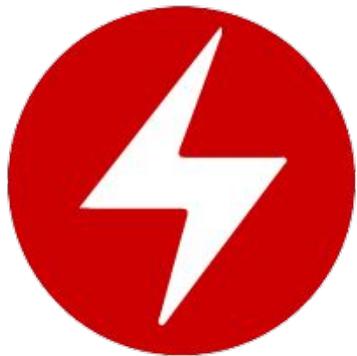


PRIVATE CLOUD

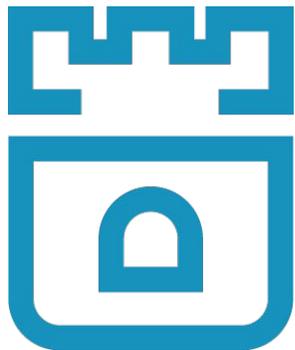


PUBLIC CLOUDS

UNDER THE HOOD



Kubernetes Operators
Framework



Rook



KubeVirt



Metal³

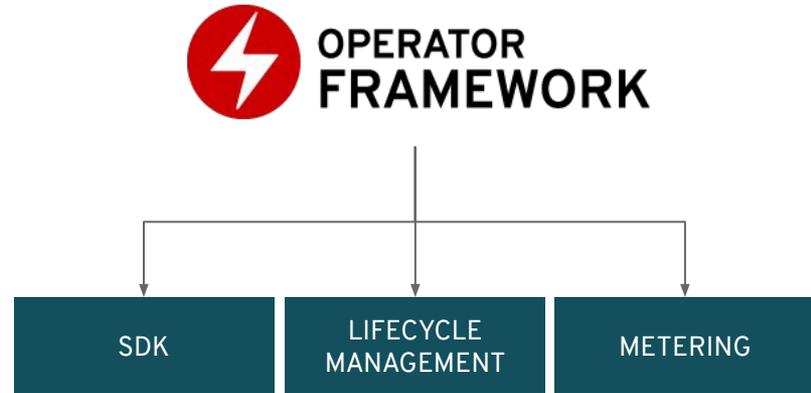


Kubernetes



OPERATOR FRAMEWORK

Operators codify operational knowledge and workflows to automate lifecycle management of containerized applications with Kubernetes





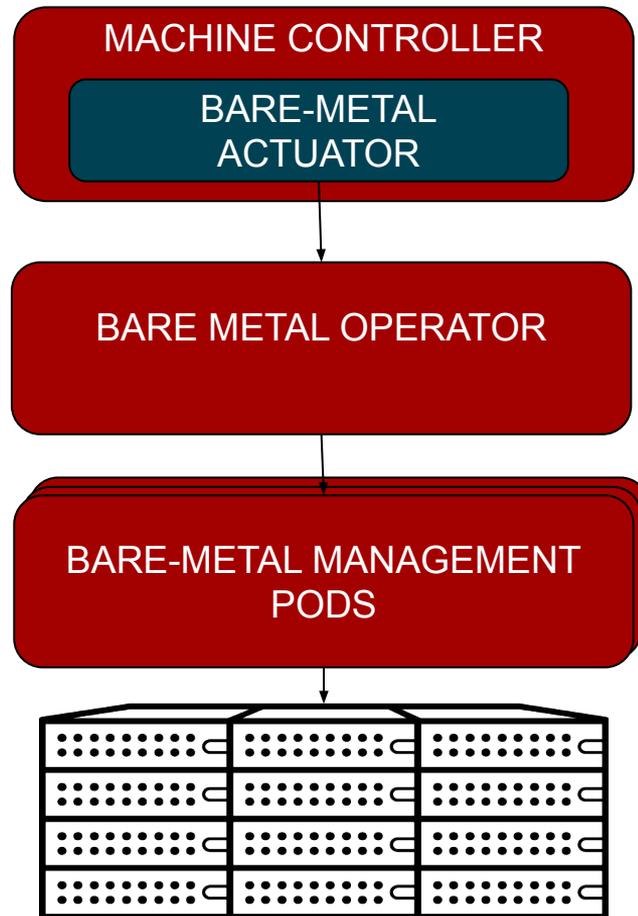
METAL³

Metal³ (<http://metal3.io/>) project:

- Pronounced: Metal Kubed
- Enables **bare metal host management for Kubernetes.**

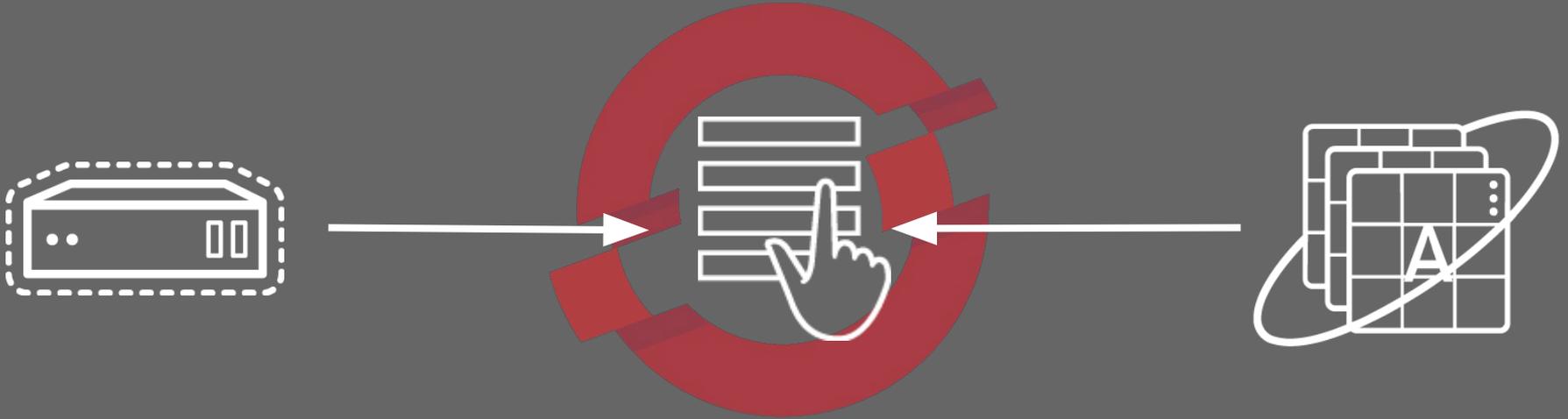
This means Metal³:

- Runs on Kubernetes.
- Is managed through Kubernetes interfaces.





CONTAINER-NATIVE VIRTUALIZATION

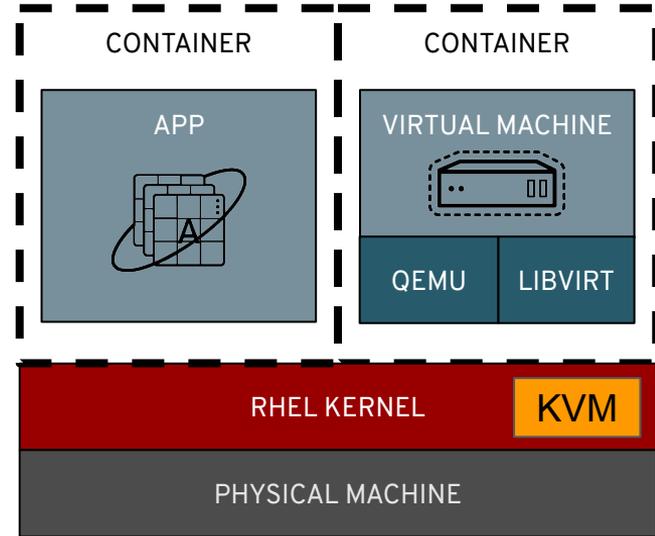
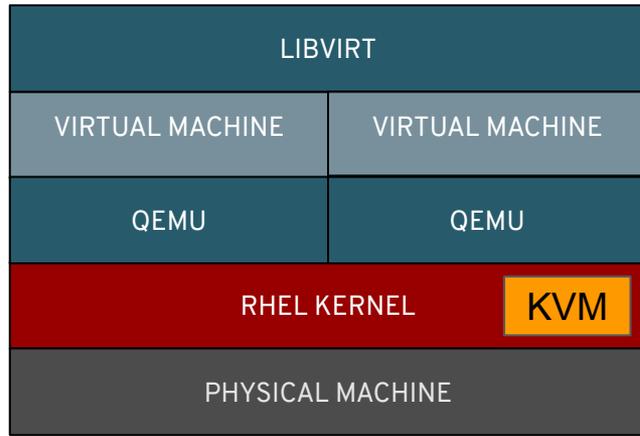


Add virtual machines to your OpenShift projects as easily as application containers.
Easily leverage existing VM-based services from your new workloads!



KUBEVIRT

www.kubevirt.io

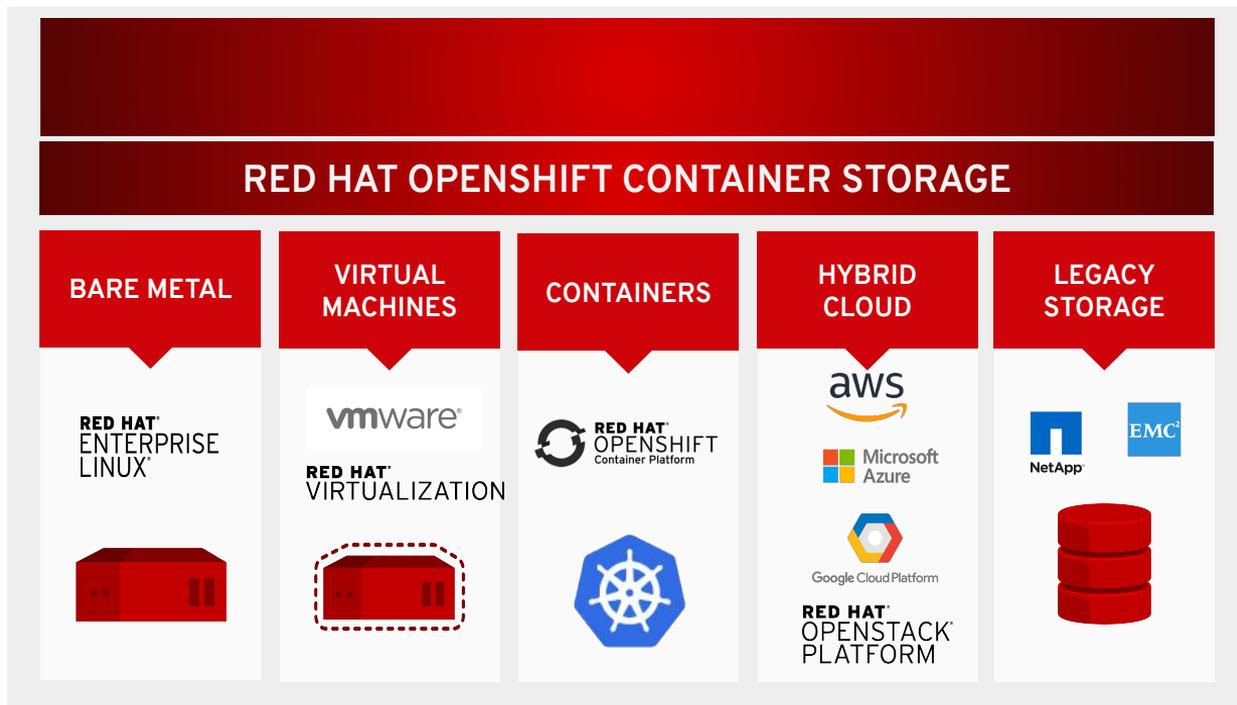


Virtual machines are able to run side by side directly on the same OpenShift nodes as application containers.

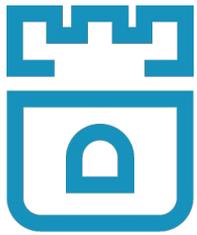
Storage Infrastructure

OPENSIFT CONTAINER STORAGE

Application portability through consistent consumption, management, and operations

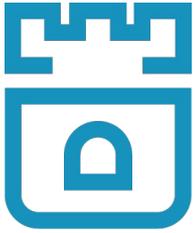


ANY CLOUD. ANY APP. NO LOCK IN.

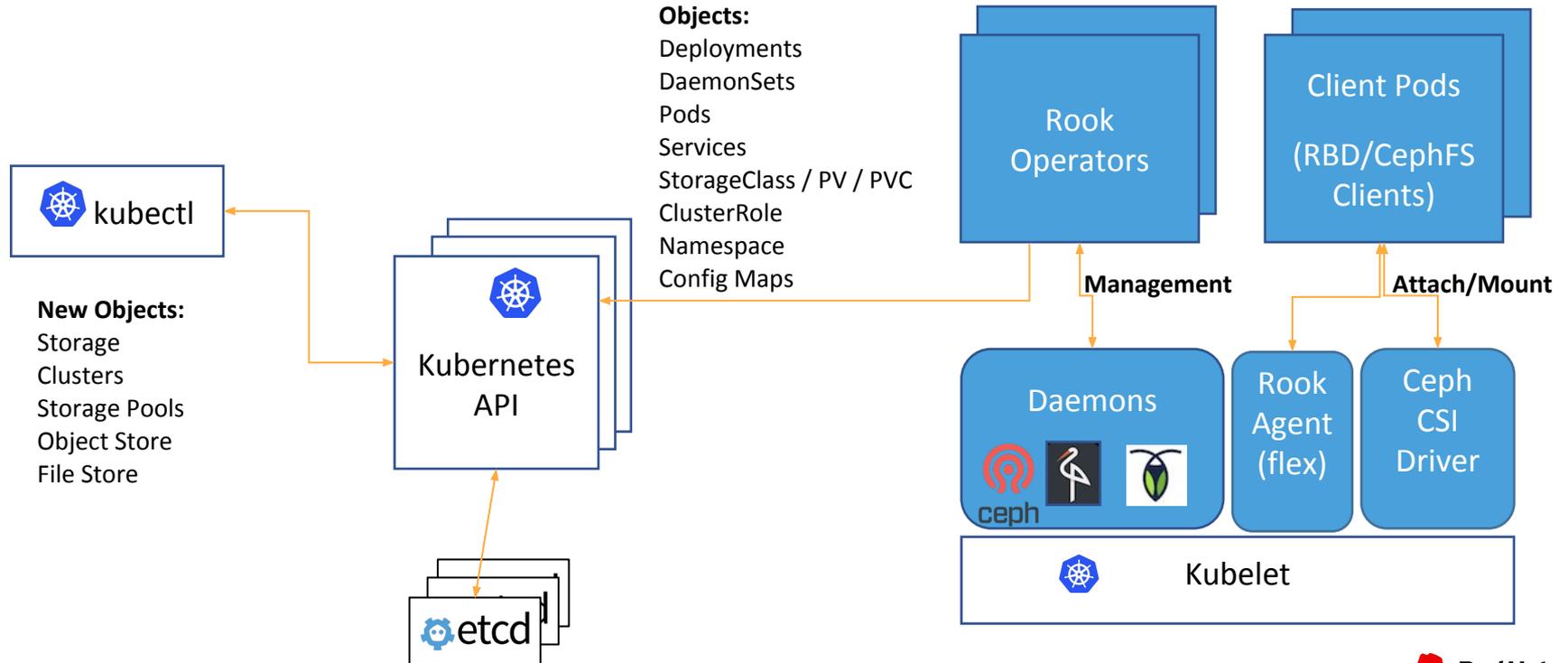


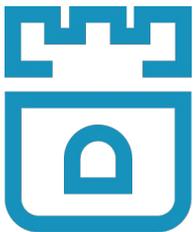
ROOK

- Rook project (<https://rook.io/>):
 - Cloud-native Storage orchestrator
 - Automates deployment and life cycle management of storage
 - Bootstrapping
 - Configuration, provisioning, scaling, upgrading, migration, disaster recovery, monitoring, and resource management



ROOK ARCHITECTURE





CEPH ON OPENSSHIFT WITH ROOK



Volume Claim



Volume Claim



ROOK pods

 Agent

 Agent

 Operator

 Agent

 Agent

 Agent

 Mon

 MGR

 MDS

 Mon

 RGW

 RGW

 Mon

 OSD's



 OSD's



 OSD's



 OSD's



 OSD's



Summary

KUBERNETES NATIVE INFRASTRUCTURE

