Intro + Deep Dive Provider IBM Cloud

Sahdev Zala
Richard Theis
Brad Topol

SIG Cloud Provider

❑ Owns K8s Cloud Provider Interface (CPI) code and related work

- CPI is responsible for running all the cloud-provider specific control loops
- Repository that defines CPI - https://github.com/kubernetes/cloud-provider

❑ Ensures that the Kubernetes ecosystem is evolving in a way that is neutral to cloud providers

❑ Ensure a consistent and high-quality user experience across providers

❑ Owns all the subprojects formerly owned by SIG-AWS, SIG-AZURE, SIG-GCP, SIG-IBM Cloud, SIG-Openstack, SIG-Vmware

❑ Provider IBM Cloud

- Subproject of the Cloud Provider SIG

https://github.com/kubernetes/community/tree/master/sig-cloud-provider

Provider IBM Cloud

- ❑ Subproject of Cloud Provider SIG for building, deploying, maintaining, supporting, and using Kubernetes on IBM Cloud
- ❑ Many developers and leaders from IBM Cloud work openly in this group to determine the future of IBM Cloud team's involvement in the Kubernetes community
- ❑ You can follow the evolution of the IBM Cloud platforms with respect to Kubernetes and related CNCF projects
- ❑ You interact directly with the team that builds and operates IBM Cloud

Structure

- ❑ Co-leads
  - Khalid Ahmed (MCM)
  - Richard Theis (IKS and ROKS)
  - Sahdev Zala (OSS)
- ❑ Mailing List
  https://groups.google.com/forum/#!forum/kubernetes-provider-ibmcloud
- ❑ Slack discussions
  #provider-ibmcloud on kubernetes.slack.com
- ❑ More about the project
  https://github.com/kubernetes/community/tree/master/sig-cloud-provider#provider-ibmcloud

- ❑ Meet every month
  - Last Wednesday at 14:00 EST
  - Meeting recordings - https://bit.ly/sig-ibmcloud-videos
- ❑ Participation in the SIG Cloud Provider general activities
- ❑ Subprojects and upstream contributions
  - Cluster-api-provider-ibmcloud
    - Implementation of Cluster API project of Kubernetes
    - Provides optional, additive functionality on top of core Kubernetes to manage the lifecycle of a Kubernetes cluster
    - https://github.com/kubernetes-sigs/cluster-api-provider-ibmcloud
  - Support for out-of-tree IBM Cloud Provider (WIP)

IBM Cloud Kubernetes Service is a **managed offering** to create your own Kubernetes cluster of compute hosts to deploy and manage containerized apps on IBM Cloud. As a certified Kubernetes provider, IBM Cloud Kubernetes Service provides intelligent scheduling, self-healing, horizontal scaling, service discovery and load balancing, automated rollouts and rollbacks, and secret and configuration management for your apps.

https://www.ibm.com/cloud/container-service

IKS
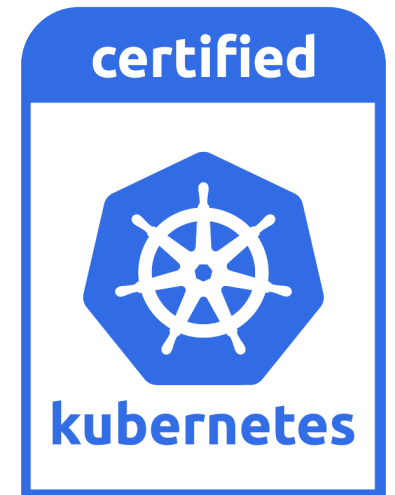
IKS already provided **3** releases in **2020**. Are you staying current with Kubernetes? Should **Kubernetes** deliver 3 or 4 releases per year? Is the monthly **Kubernetes** patch cadence sufficient? Please contribute to the community discussions.

Supported?	Version	IBM Cloud Kubernetes Service release date	IBM Cloud Kubernetes Service unsupported date
✓	1.19	13 Oct 2020	Oct 2021 †
✓	1.18	11 May 2020	Jun 2021 †
✓	1.17	10 Feb 2020	Mar 2021 †
!	1.16	04 Nov 2019	29 Jan 2021 †
✗	1.15	05 Aug 2019	22 Sep 2020

Red Hat OpenShift on IBM Cloud is a **managed offering** to create your own OpenShift cluster of compute hosts to deploy and manage containerized apps on IBM Cloud. Red Hat OpenShift on IBM Cloud provides intelligent scheduling, self-healing, horizontal scaling, service discovery and load balancing, automated rollouts and rollbacks, and secret and configuration management for your apps.

https://www.ibm.com/cloud/openshift

ROKS

ROKS already provided **3** releases in **2020**. Are you staying current with OpenShift? **Kubernetes** release velocity impacts OpenShift.

Supported?	OpenShift / Kubernetes version	Red Hat OpenShift on IBM Cloud release date	Red Hat OpenShift on IBM Cloud unsupported date
✓	4.5 / 1.18	13 Oct 2020	August 2021 †
✓	4.4 / 1.17	21 Jul 2020	May 2021 †
✓	4.3 / 1.16	20 Apr 2020	February 2021 †
!	3.11 / 1.11	01 Aug 2019	June 2022 †

IBM Cloud Provider: CCM

Kubernetes cluster architecture **with** cloud controller manager

IBM Cloud Provider: Interfaces
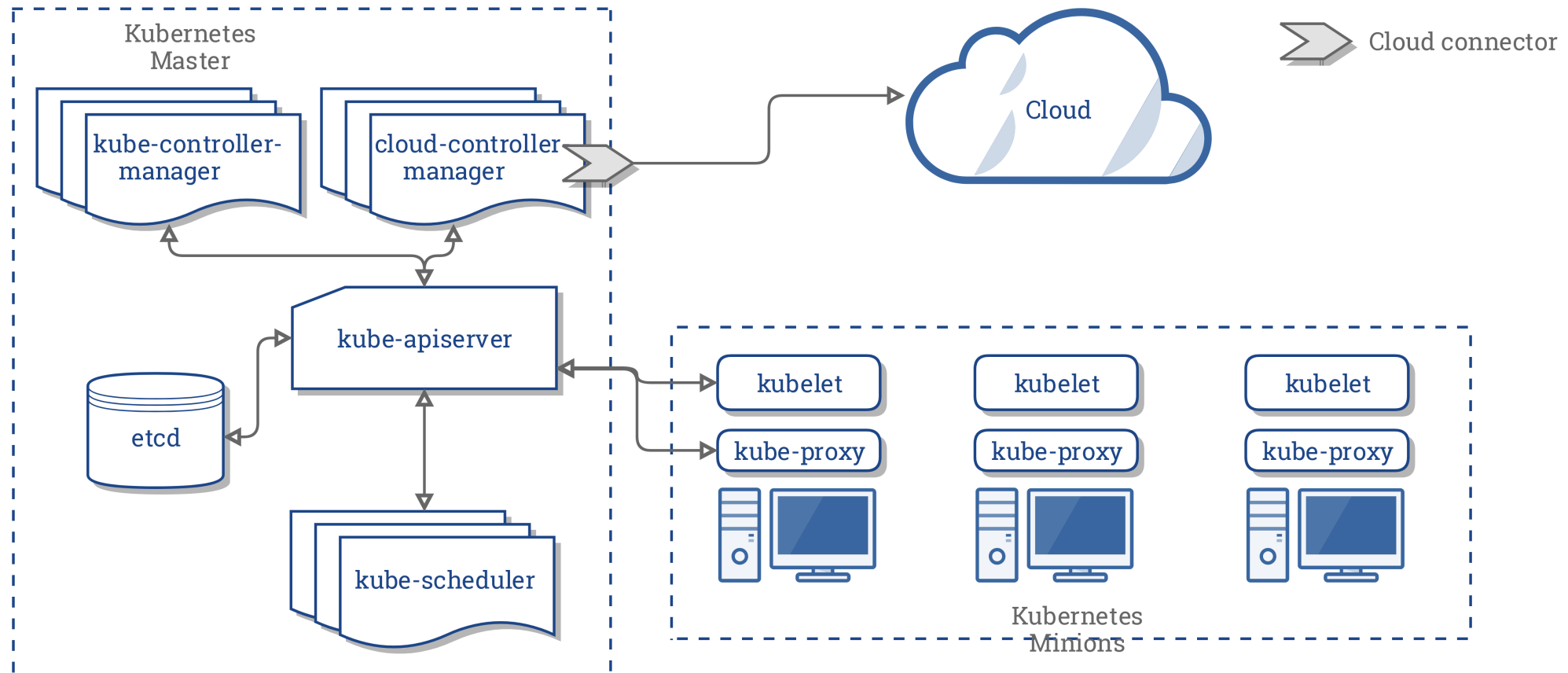
❑ Load Balancer

- NLB version 1.0, iptables based, in-cluster network load balancer
- NLB version 2.0 (beta), IPVS based, in-cluster network load balancer
- VPC layer 7 LB
- **New:** VPC NLB

❑ Instances (i.e. Nodes) and InstancesV2 (new in 1.19)

- Relies on node bootstrap to setup node labels

❑ Zones

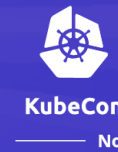- Relies on node bootstrap to setup node labels

❑ Clusters

- Not implemented.

❑ Routes

- Not implemented. Calico provides routing.

IBM Cloud Provider: Future

- ❑ Open source IBM Cloud Provider
- ❑ Improve documentation
- ❑ Align build, test and release processes with community
- ❑ Move to Go modules for dependency management

cluster-api-provider-ibmcloud

https://github.com/kubernetes-sigs/cluster-api-provider-ibmcloud

- Target cluster
  - The declared cluster we intend to create and manage
- Bootstrap/Management cluster
  - The cluster that manages the target cluster
  - Possibly the same cluster
- clusterctl
  - Community CLI tool for creating and managing provider cluster
- Provider implementation
  - An implementation of the API specific to a cloud (IBM Cloud, Google, OpenStack, etc.)
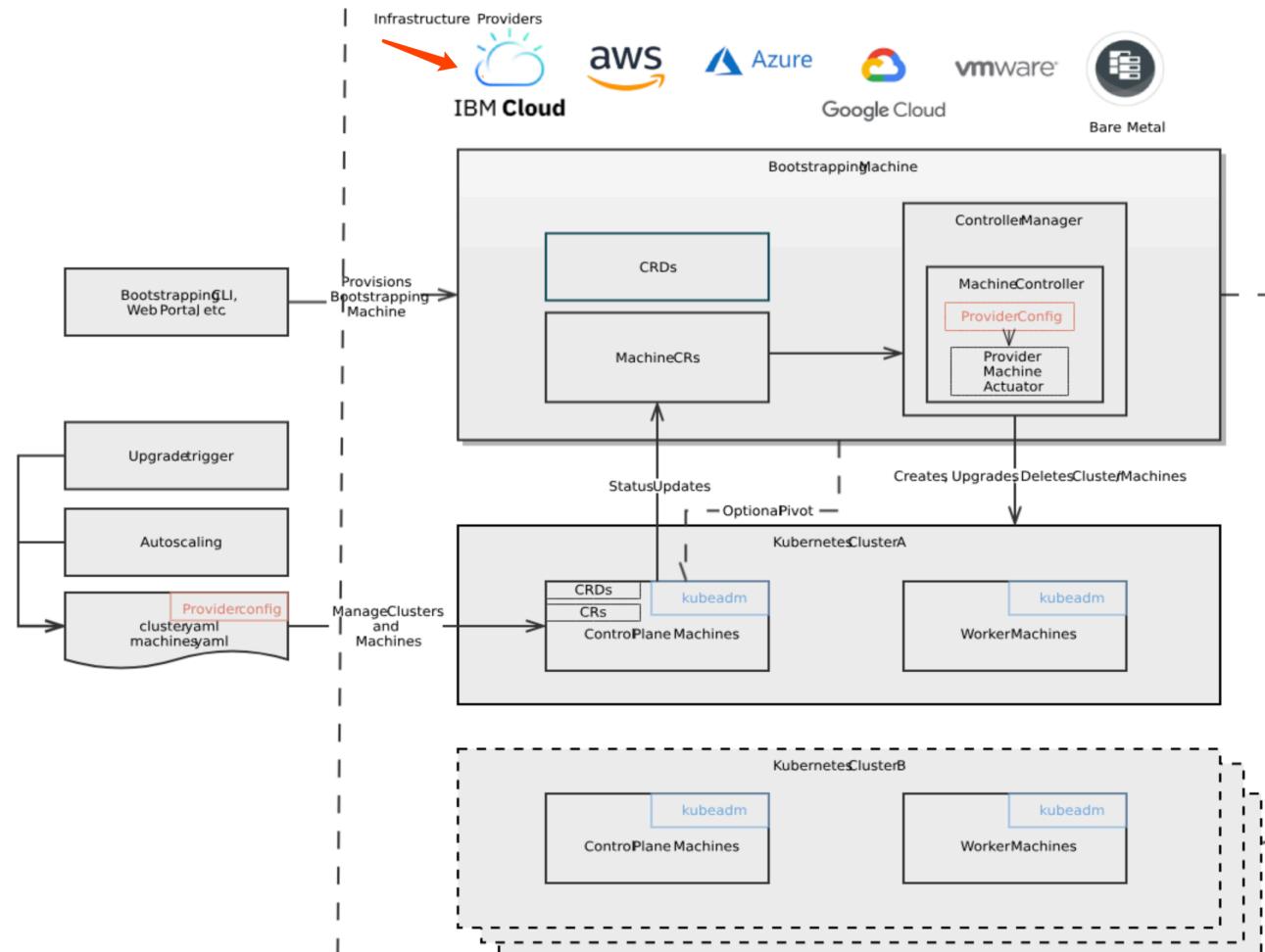
What's the Difference between Kube and OpenShift?

OpenShift is a Kubernetes distribution that includes extra tooling to simplify cloud native development and also provides automated operations support

❑ Image Creation and Deployment Tooling
- Source 2 Image, Pushing Image to Registries
- Image and Configuration Change Detection

❑ Security Guardrails
- Security Context Constraints
- Prevents privileged containers from running by default
- Default Namespace use prevented

❑ Automated cluster size management
- Automatically provision new worker nodes to increase cluster size

❑ Automated Day 2 operations
- Automated installation, Automated updates, Cluster Version Management

THANK YOU!