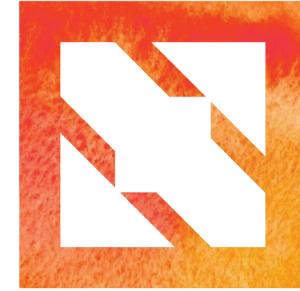


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# SIG IBM Cloud

Sahdev Zala  
Khalid Ahmed  
Nimesh Bhatia  
Brad Topol

# Agenda



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- ❑ SIG Overview
- ❑ Overview of the IBM Cloud
  - Public, Private, Hybrid
- ❑ SIG Subprojects
  - Cluster API
  - IBM Cloud Provider Interface
- ❑ Summary
- ❑ Discussion

# Overview



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- ❑ A SIG for building, deploying, maintaining, supporting, and using Kubernetes on IBM Public and Private Clouds
  - IKS and ICP
  - Both participate in the CNCF Certified Kubernetes Conformance Program and are certified
- ❑ 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 IKS and ICP platforms with respect to Kubernetes and related CNCF projects
- ❑ You interact directly with the team that builds and operates IBM Cloud

# Structure



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## ❑ Co-chairs

- Sahdev Zala (OSS)
- Khalid Ahmed (ICP)
- Richard Theis (IKS)

## ❑ Charter

- SIG Scope and Governance

<https://github.com/kubernetes/community/blob/master/sig-ibmcloud/charter.md>

## ❑ Mailing List

<https://groups.google.com/forum/#!forum/kubernetes-sig-ibmcloud>

## ❑ More about the SIG

<https://github.com/kubernetes/community/tree/master/sig-ibmcloud>

# Activities



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## ❑ Meet every other week

- Wednesday at 14:00 EST
- Meeting recordings
  - <https://bit.ly/sig-ibmcloud-videos>
  - Presentations on various topics
  - Presentation from various members from IBM, Sysdig etc

## ❑ Slack #sig-ibmcloud

## ❑ Quarterly updates to the Kubernetes community

## ❑ Subprojects

- Cluster-api-provider-ibmcloud
- Support for out-of-tree IBM Cloud Provider (WIP)

## ❑ Collaboration with the SIG Cloud-Provider

## ❑ Public

- IBM Cloud Kubernetes Service (IKS)

## ❑ Private

- IBM Cloud Private (ICP)

## ❑ Hybrid

A **managed Kubernetes service** providing an intuitive user experience with simplified cluster lifecycle management. Built-in **security and isolation** to enable rapid delivery of apps, while leveraging IBM Cloud Services including Weather data, IoT, Analytics, or **AI capabilities with Watson**. Available in six IBM regions WW, including **25+ datacenters**.

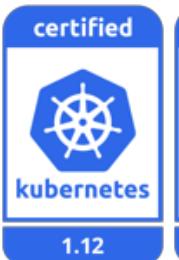


<https://www.ibm.com/cloud/container-service>



Kubernetes Certified Service Provider  
Kubernetes Technology Partner  
Kubernetes Service Providers

1.14 +



# IKS Workload flexibility



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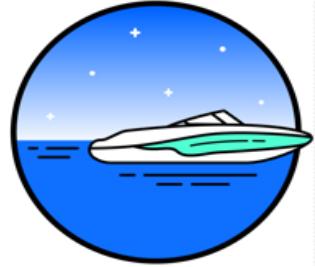
- 6 IBM Cloud Regions, 25+ Datacenters



Region04	Data Centers
AP North	<ul style="list-style-type: none"><li>• Hong Kong</li><li>• Seoul</li><li>• Singapore</li><li>• Tokyo</li></ul>
AP South	<ul style="list-style-type: none"><li>• Melbourne</li><li>• Sydney</li></ul>
EU Central	<ul style="list-style-type: none"><li>• Amsterdam</li><li>• Oslo</li><li>• Milan</li><li>• Paris</li><li>• Frankfurt</li></ul>
United Kingdom	<ul style="list-style-type: none"><li>• London</li></ul>
US East	<ul style="list-style-type: none"><li>• Montreal</li><li>• Toronto</li><li>• Washington, DC</li></ul>
US South	<ul style="list-style-type: none"><li>• Sao Paulo</li><li>• Houston</li><li>• San Jose</li><li>• Dallas</li></ul>

[https://console.bluemix.net/docs/containers/cs\\_regions.html#region-and-locations](https://console.bluemix.net/docs/containers/cs_regions.html#region-and-locations)

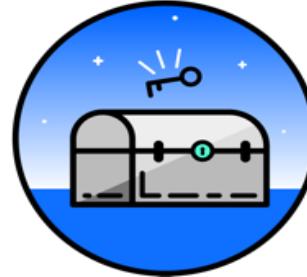
# IKS Capabilities



Simplified cluster  
management



Design your  
own cluster



Security  
& isolation



Extend apps with  
IBM Cloud services



Native open-source  
experience



Integrated  
operational tools

# IBM Cloud Private

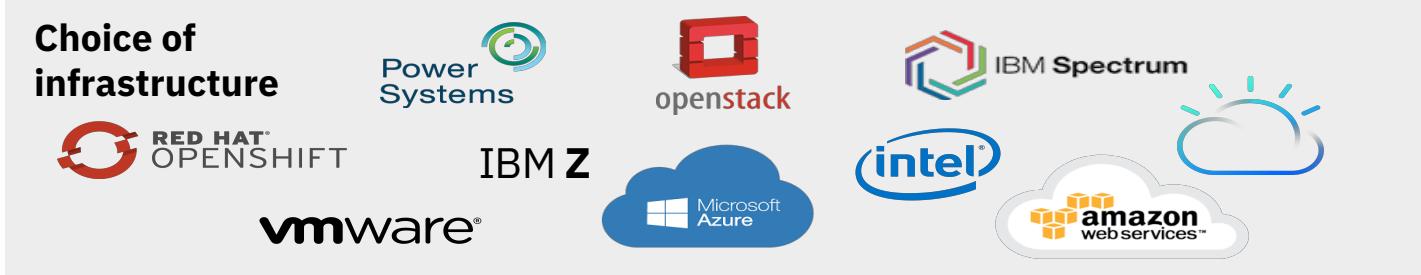
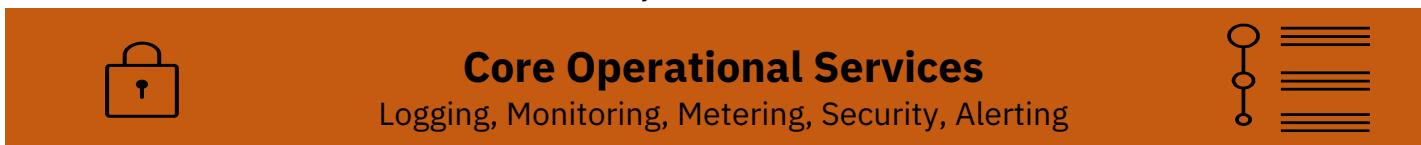
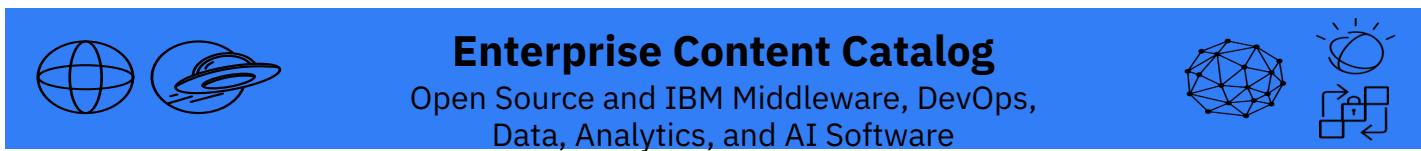


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## Enterprise Kubernetes:

- Built on open-source (Upstream K8S, Calico, Helm, Elasticsearch, Grafana, Prometheus,...)
- Broad hardware support
- Self-service catalog
- Agility, scalability, and elasticity
- Self-healing
- Enterprise security
- No vendor lock-in

<http://ibm.biz/Try-IBMCLOUDPRIVATE>

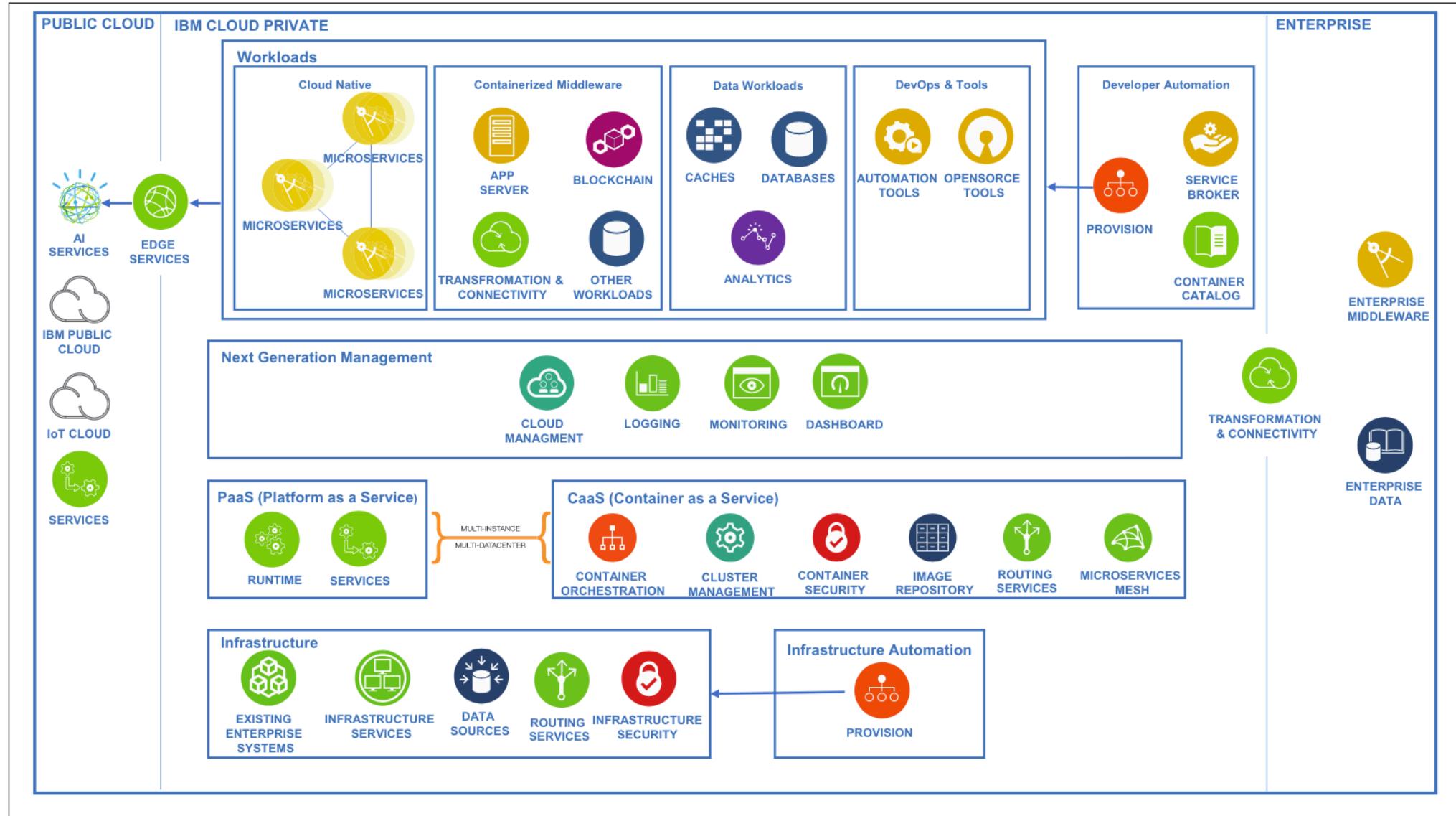
# IBM Cloud Private Architecture



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# IBM Multicloud Manager



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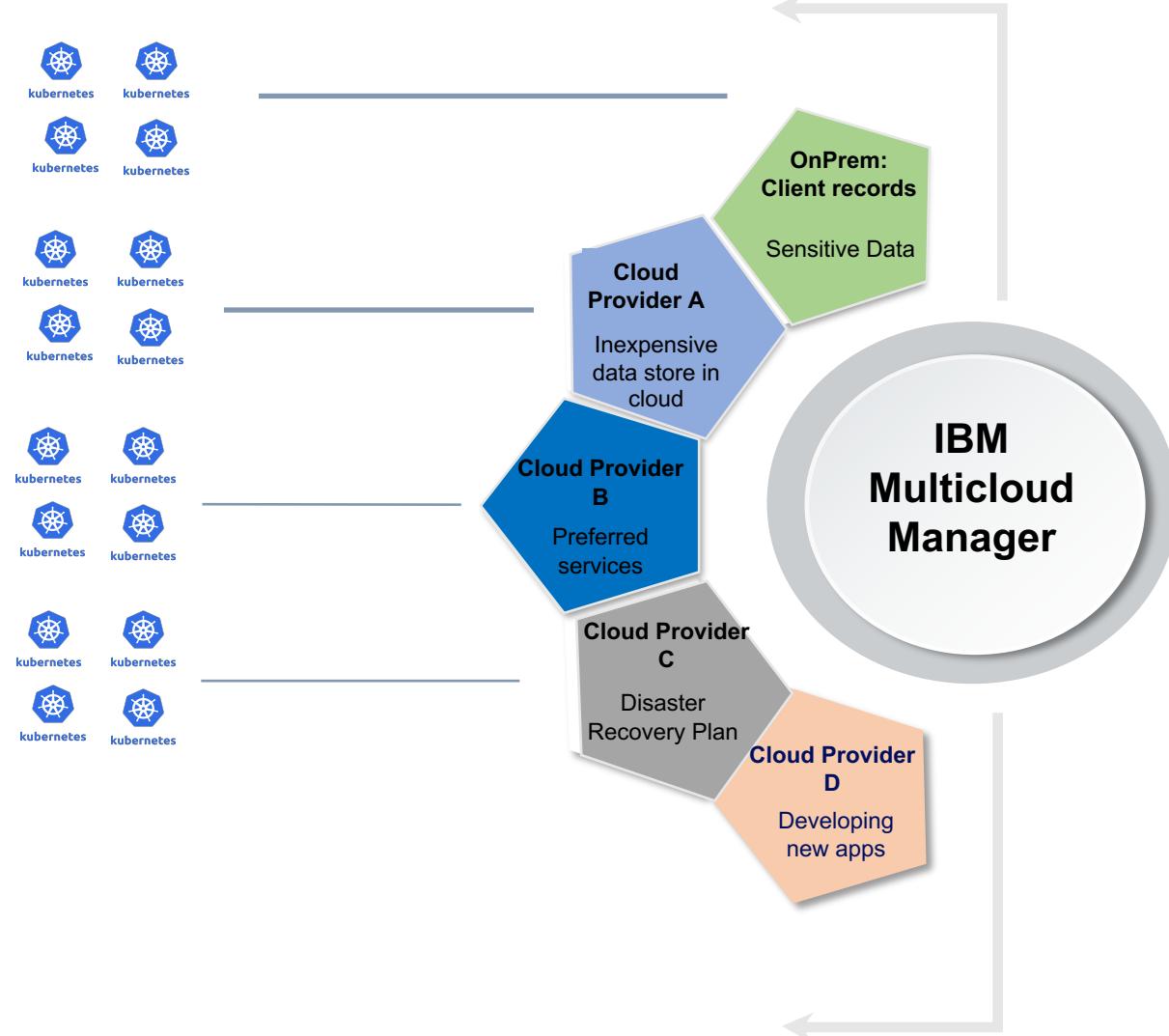
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Multiple clusters to manage geographical data residency laws

Reduce on prem storage costs by storing non sensitive data in public cloud

Leverage most desired services in preferred cloud (AI/Analytics/object storage)

Load all applications on another provider maintain operations if one provider goes down (disaster recovery)



From 1 cluster on 1 cloud ....

to many clusters on numerous clouds ....

**IBM Multicloud Manager**

seamlessly moves you through the journey

# IBM Multicloud Manager



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Simplified Multi-Cluster Management



Policy Based Role & Compliance Management



Multi-Cluster Application Management



Works across Public & Private Environments



Event & Service Management Integration



Integrated Operational Tools

IBM Multicloud Manager

Overview

Create resource Catalog Refresh every 20s

AWS	Azure	Google	IBM
2 Clusters 01 EKS 01 RHOC	1 Clusters 01 AKS	2 Clusters 01 GKE	9 Clusters 04 ICP 02 IK8 01 RHOC 02 Other

Storage usage: below average (11.56 - 86.62GiB) above Used by: pods

1 Apps      13 Clusters      8 Kubernetes Types      4 Regions      15 Nodes      640 Pods

Group By Purpose      Size Pods      Shade Storage

Dev      Prod

Cluster compliance 13      Pods 640      Cluster status 13

Create Compliance

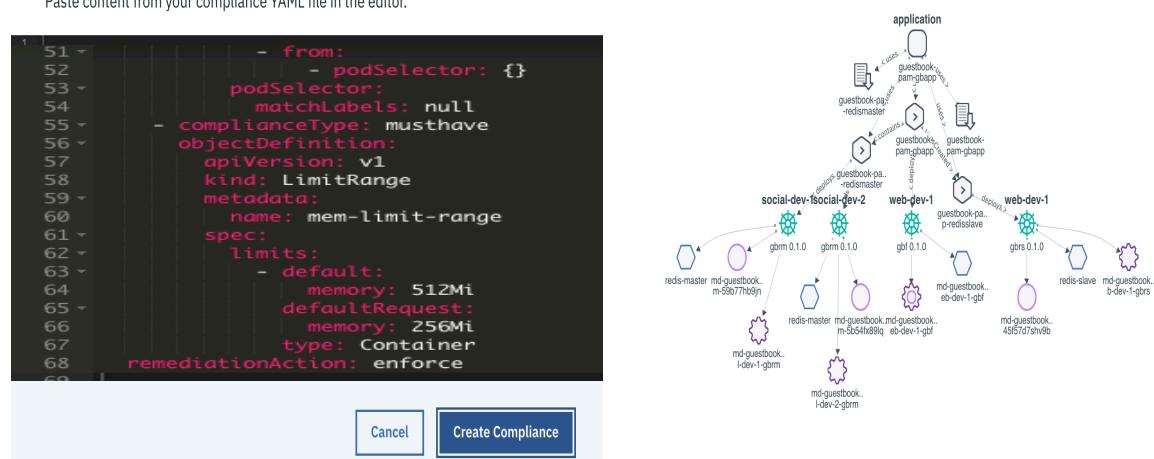
Paste content from your compliance YAML file in the editor.

```
1 51 -      - from:
2 52 -          - podSelector: {}
3 53 -              matchLabels: null
4 54 -      - complianceType: musthave
5 55 -          objectDefinition:
6 56 -              apiVersion: v1
7 57 -              kind: LimitRange
8 58 -          metadata:
9 59 -              name: mem-limit-range
10 60 -          spec:
11 61 -              limits:
12 62 -                  - default:
13 63 -                      memory: 512Mi
14 64 -                  defaultRequest:
15 65 -                      memory: 256Mi
16 66 -                  type: Container
17 67 -          remediationAction: enforce
18 68
```

Cancel

Create Compliance

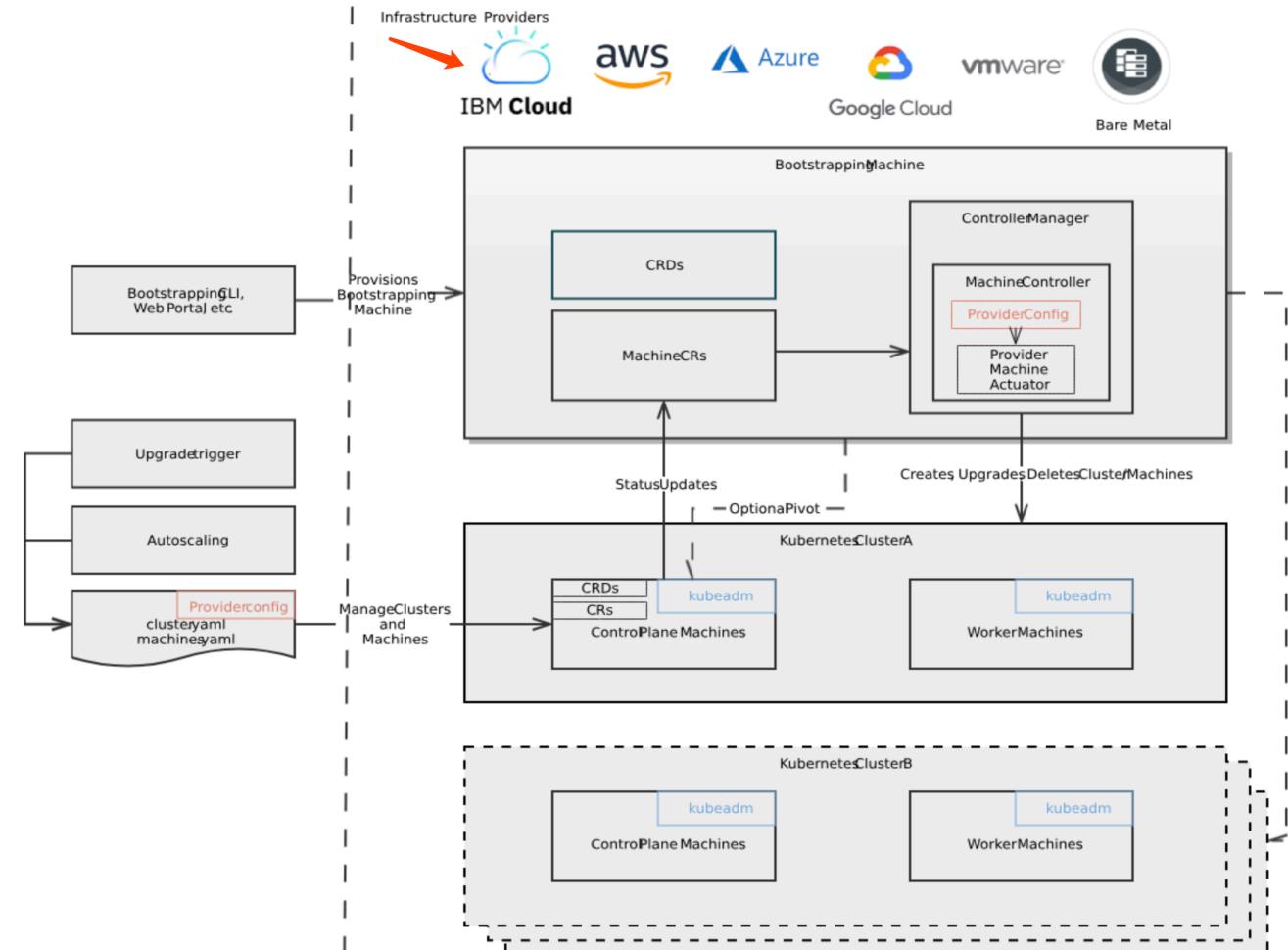
Create Application +



# SIG Subproject – cluster-api-provider-ibmcloud

## Cluster API Overview

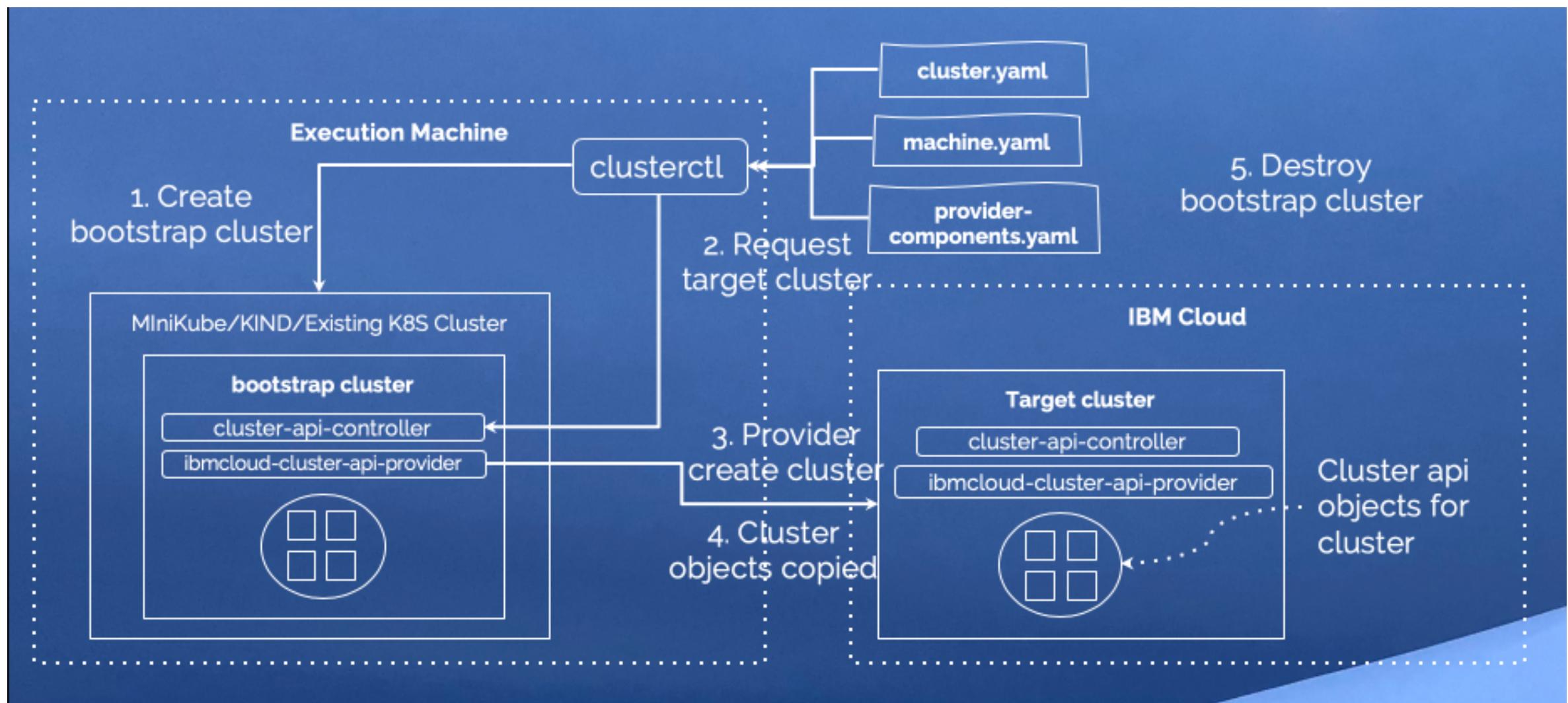
- Target cluster
  - The declared cluster we intend to create and manage
- Bootstrap/Management cluster
  - The cluster that manages the target cluster
  - Possibly the same cluster
- `clusterctl`
  - Community CLI tool that favors a provider implementation for creating and managing a cluster
- Provider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



# Cluster API IBM Cloud Provider Detail



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# SIG Subproject (WIP) – IBM Cloud Provider Interface

## ❑ Load Balancer

- Implements in-cluster load balancers leveraging Kubernetes resources
- Manages VIP using keepalived
- In-cluster routing via kube-proxy
- Version 1.0 is iptables based LB
- Version 2.0 is IPVS based LB

## ❑ Instances (i.e. Nodes)

- IKS node bootstrapping manages instances
- IKS node bootstrapping manages zones

# IBM Cloud Provider Interface: Kubernetes Controller Manager (KCM)

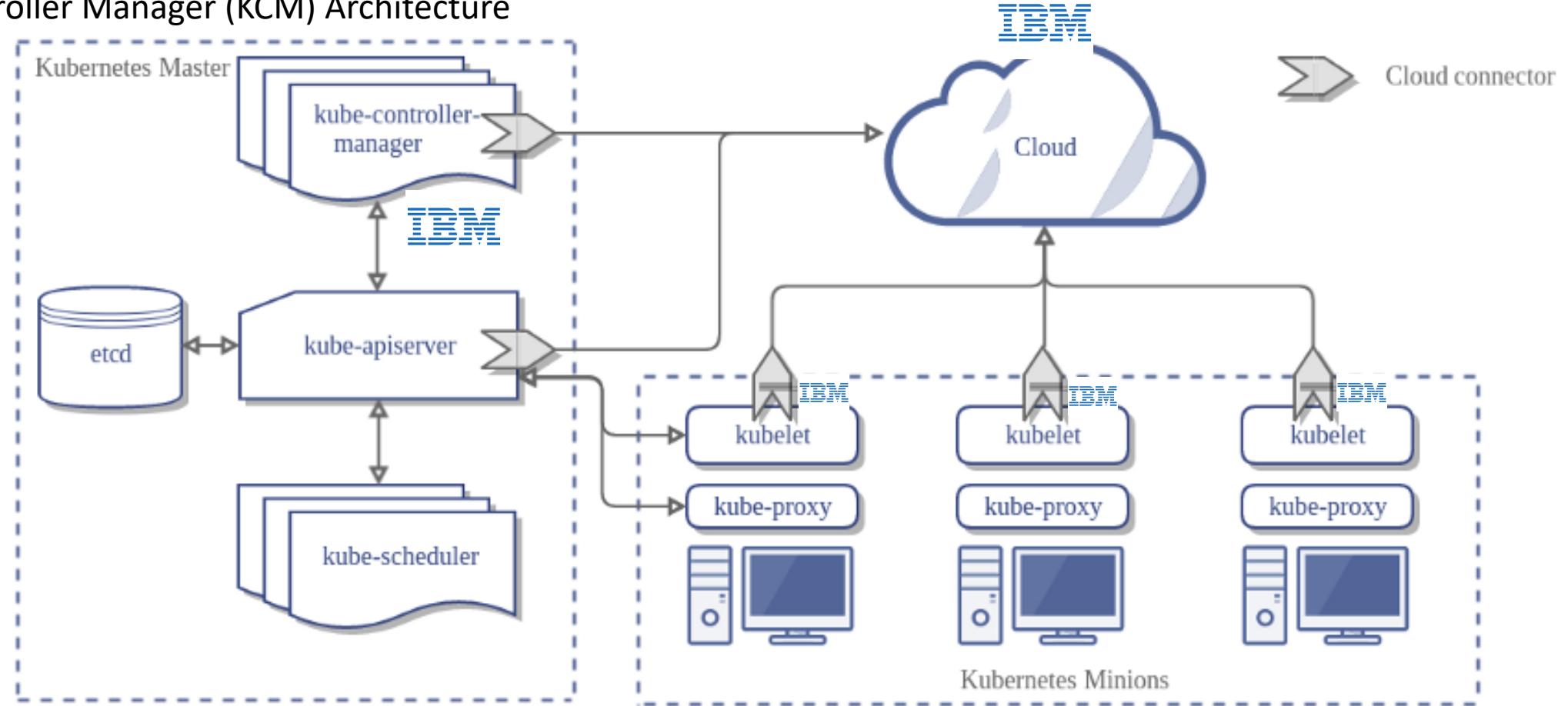


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Kubernetes Controller Manager (KCM) Architecture



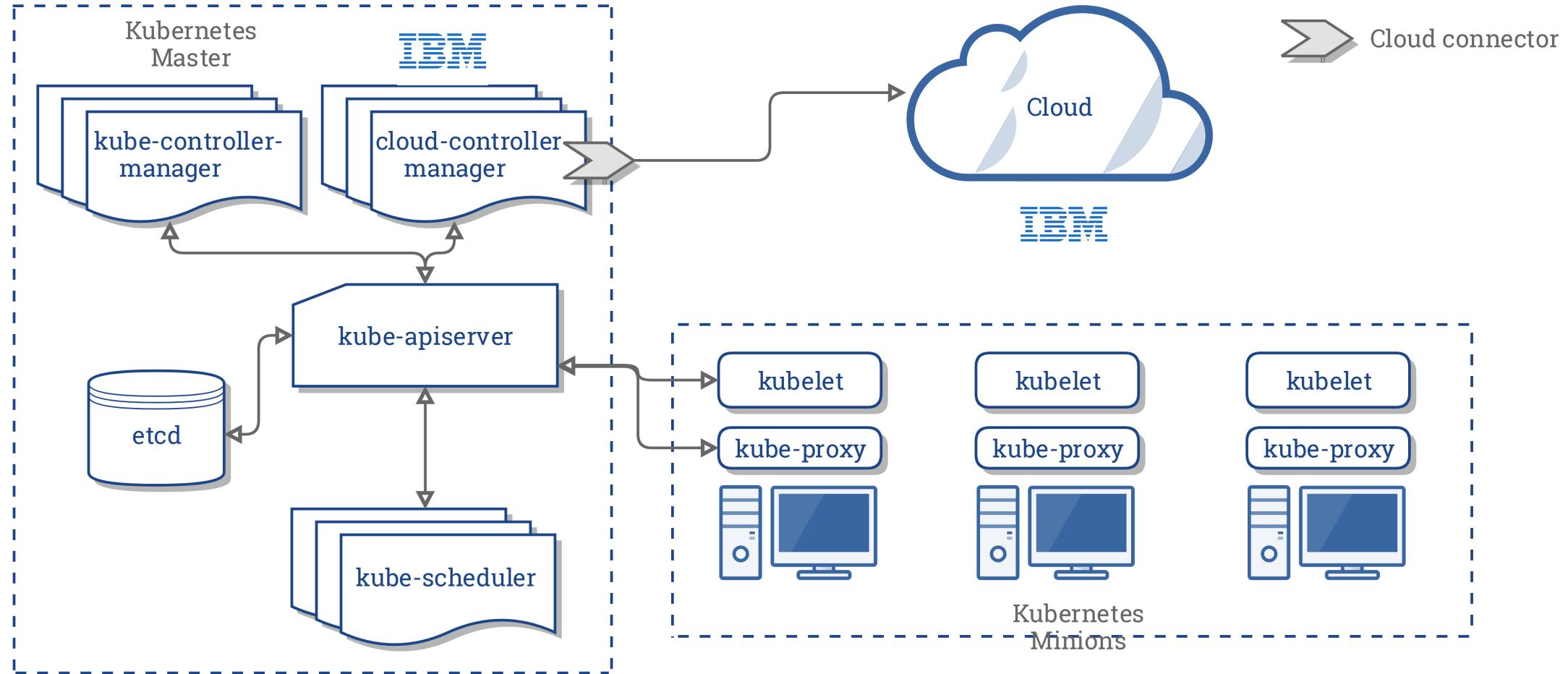
# IBM Cloud Provider Interface: Kubernetes Cloud Controller Manager (CCM)



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# Summary



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- ❑ A SIG for building, deploying, maintaining, supporting, and using Kubernetes on IBM Public and Private Clouds
- ❑ Join the SIG Discussions
  - ❑ Follow the evolution of the IKS and ICP with respect to Kubernetes and related CNCF projects
- ❑ Subprojects
  - ❑ Cluster-api-provider-ibmcloud
  - ❑ IBM Cloud Provider (WIP)
- ❑ The IBM Cloud team significantly contributes to the community

# THANK YOU!



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# THANK YOU !

SIG IBM Cloud

# Backup



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