Kubernetes
IBM Cloud SIG - Intro

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Architect, Kubernetes contributor
Agenda

- SIG overview
- SIG structure and activities
- Overview of IBM Clouds
  - IBM Cloud Kubernetes Service (IKS)
  - IBM Cloud Private (ICP)
- SIG contributions to the Kubernetes upstream
- Summary
Overview

- A SIG for building, deploying, maintaining, supporting, and using Kubernetes on IBM Public and Private Clouds
  - IBM Cloud Kubernetes Service (IKS) and IBM Cloud Private (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
- Created - April, 2018
Meet every other week
- Wednesdays at 14:00 EST. About 7-10 regular attendees

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

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

Join the SIG ML
https://groups.google.com/forum/#!forum/kubernetes-sig-ibmcloud

Slack #sig-ibmcloud

Read more about the SIG
https://github.com/kubernetes/community/tree/master/sig-ibmcloud
Key Discussions in the SIG Meetings

- **Brief presentations**
  - IBM Cloud Kubernetes Service (IKS) updates
    - Overview and demo of IKS
    - Kubernetes update strategy - supports 3 concurrent releases at any time (1.8->1.11 today)
    - Multi-Zone cluster support
  - IBM Cloud Private (ICP) updates
    - Overview and demo of ICP
    - Scalability testing - certified to 1000 nodes. Incremental work - WIP.

- **Discussion around community work**
  - SIG-Cloud-Provider integration
    - We are working on moving as a sub-project
  - IBM Cloud Provider code public repo – WIP
  - SIG maintenance work
    - For example, creating charter
  - Contributions from IBM Cloud developers (PR, Issues, Discussions..)
IBM Cloud Kubernetes Service (IKS)

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
Datacenter Expansion

6 IBM Cloud Regions, 25+ Datacenters
Kubernetes Capabilities

Intelligent Scheduling

Self-healing

Horizontal scaling

Service discovery & load balancing

Automated rollouts and rollbacks

Secret and configuration management
Kubernetes Management Capabilities

- Simplified cluster management
- Design your own cluster
- Container security & isolation
- Extend with IBM Cloud & Watson
- Native open-source experience
- Integrated operational tools
Watson AI Workloads on IKS

IBM Watson workloads:

Proven AI workload on IBM Cloud Kubernetes Service

12 Watson services/apps represented as 800+ Kubernetes services

“We no longer worry about managing the infrastructure because IBM Cloud Kubernetes Service takes care of that for us.” – Watson Project Team

One deployment example:

3000+ pods on 500+ nodes
Recap – Benefits of IKS

- Multiple data centers where you can deploy your clusters
- Support for Ingress and Load balancer networking options
- Dynamic persistent volume support
- Highly available, IBM-managed Kubernetes masters
- Enhance your apps using 170+ services from IBM Cloud catalog, including Watson, Weather, IoT, and Analytics
IBM Cloud Private

Application Development, Integration, Operations & Management

IBM DevOps  Microservices  Hybrid Cloud Management

Next Generation Middleware, Data, Integration & Analytics

TensorFlow  WebSphere  DB2  IBM MQ  OpenShift  Apache

IBM Cloud private Platform

Kubernetes-based Platform
Multiple open compute models
IaaS Automation, Containers, PaaS & Functions
Software & Policy driven Network & Storage
Autoscaling & Automatic Application Recovery
Multi-site HA/DR features

Stateful & Stateless Application Support
Built-in Monitoring & Logging
Integrated Enterprise-grade Security
Vulnerability Advisor to prevent risk

Solution Architectures & Best Practices
Integration Content
Middleware, Data, management & Analytics Content

Enterprise Infrastructure

IBM Storage  Power Systems  z Systems  VMware

IBM MQ  Kubernetes

Cluster

kubernetes
apiserver
kubernetes
scheduler
kubernetes
proxy
kubelet
etcd

Continuous Delivery
Image Registry  Continuous Integration  App Catalog  App Health  App Log Analysis  API Mgmt

Continuous Availability
Monitoring  Log Analysis  Auditing  Alerting  Metering

Continuous Security
Authentication  RBAC  Certificate Store  Key Store  Image Vulnerability

Network Mesh with Support for Tenant Isolation

Highly Available
Masters Virtual IP
Proxies Virtual IP
Workers
Persistent Storage
Why Multicloud

As our businesses become ecosystems for delivering greater value in a digital world, a multi-cloud strategy is not only the new reality, but the fastest path to new value - connecting multiple cloud environments or connecting cloud and on-premises environments. Connecting multiple cloud environments or connecting cloud and on-premises environments.

- **Unique Needs**
  You can run each workload where it performs best, for the lowest cost.

- **Legacy Apps**
  You can avoid the pain of migrating legacy apps to a new platform.

- **Desire to Diversify**
  You can avoid vendor lock-in and latency while creating redundancy.
IBM Multicloud Manager

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<td>Hybrid Control Plane</td>
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<td>Resources, Configurations, Automation, Work Distribution, Policy, Security, Compliance</td>
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- AI-based interaction- Watson Conversation, SlackBot ….
- IBM Cloud Private
- IBM Public Cloud
- 3rd Party Public Clouds
- 3rd Party Private Clouds

Visiblity  Security  Application Management
Contribution to Open Source

Kubernetes

Istio

Contribution by companies

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<td>ZTE Corporation</td>
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Kubernetes Federation V2

**Attendees:**
- Huawei
  - Maru Newby (marun@redhat.com, marun@github)
  - Ivan Font (ifont@redhat.com, ifont@github)
  - Pmorie
  - Davis Phillips (dphilips@redhat.com, davi1x@github)
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- Community
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- Container
  - Norman Joyner (norman@container.io, normanjoner@github)
- Diamanti
  - Sambasiva Bandarupalli (sambas@diamanti.com, bandarupalli@github)
- Cisco
  - Daneyon Hansen (daneyonhansen@gmail.com, danehans@github)

**Partners:**
1. Redhat
2. Huawei
3. IBM
Contribution to Open Source

- **Cluster-Registry**
  - Keep track of and perform operations on your clusters.
  - Cluster Registry API (code, design) as a Kubernetes CRD
  - Used by IBM Multicloud Manager

- **Application**
  - Simplify application deployment.
  - [Difference with Helm Chart](#)
  - Used by IBM Multicloud Manager

- **Ingress Controller**
  - Access Kubernetes service via Ingress
  - Used by IBM Cloud Private and IBM Multicloud Manager
Summary

- 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, ICP and Multicloud Manager platforms with respect to Kubernetes and related CNCF projects
- The IBM Cloud team significantly contributes to the community
- The near term goal of the SIG is to open source the cloud provider code
Thank you

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