Kubernetes Cluster API

- Brings declarative, Kubernetes-style APIs for cluster creation, configuration & management.
- Implemented using Kubernetes Operators to scale, upgrade, heal, etc. clusters in fully automated, provider-agnostic manner.
- Integrates with provider-specific Machine Controllers and Machine Config Daemons for cloud, virt. & baremetal environments.
  ➔ Manage your clusters consistently independently of where/how it's deployed.
- New working group under Kubernetes Cluster Lifecycle SIG

https://github.com/kubernetes-sigs/cluster-api
Operator Framework

- Automate day 2 lifecycle management of containerized applications in Kubernetes
- Leverage CRDs to deploy Kubernetes native services that can access Kube API events
- Operator SDK simplifies creation of Operators in Go (or leverage Helm or Ansible automation)
- Helm Operator allows you to convert Helm Charts into Operators
  - Deploy Charts without requiring Tiller
  - Leverage Kube RBAC to deploy Charts
  - Automated, over the air updates for Chart deployed services
“Kubernetes-Native Infra (KNI) for Edge” Family

- Family of Blueprints based on a self-managing Kubernetes cluster
- Implements the Kubernetes Community’s Cluster API & Operator
- Standardizes on Kubernetes Operators for App LCM
- Supports performance-sensitive container workloads requiring multi-NIC, real-time, HW accel., etc.
  - NFV, IoT, AI/ML, ...
- Supports VM workloads via KubeVirt
- Multi-site Kubernetes Federation
“KNI for Multi-Access Edge” Blueprint

- KNI Blueprint for provider multi-access edge use cases
- Runs containerized vRAN and/or vBNG (possibly SEBA) workloads
- Supports various types of edge apps via its middlewares:
  - VM-based (Kubevirt)
  - AI/ML (Kubeflow)
  - serverless (Knative)
  - IoT (EdgeX)
THANK YOU

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