Intro: SIG Cloud Provider
Agenda

- History & Background
- Code Ownership
- Subprojects & Working Groups
- Governance
- SIG Challenges
- Questions & Discussion
History & Background
Kubernetes 2016
k8s.io/kubernetes

AWS
openstack
Google Cloud Platform
vmware
apachecloudstack
Microsoft Azure
k8s.io/kubernetes
So this is a tough phase to be in. We know we want to change the way CloudProvider works, but that work hasn't really started yet. Are you guys willing to be a bit of a guinea pig? In broad strokes, here's what I am thinking. Don't build this as a Cloud Provider. Instead, let's make ControllerManager understand that "external" is a valid cloud provider, and write this as a controller. Simply run it somewhere in the cluster and let it watch the various APIs it needs.

While you do this, you can start to catalog all the places that assume CloudProvider is populated, and your controller can be a starting point for the discussion of how to evict google and amazon and openstack into their own modules.

@errordeveloper
Cloud Provider Working Group
Cloud Controllers in kube-controller-manager (KCM)

- Node controller
- Service controller
- Routes/IPAM controller
- PersistentVolumeLabel Controller
- Volume Controller
cloud-controller-manager (CCM)

- Node controller
- Service controller
- Routes/IPAM controller
- PersistentVolumeLabel Controller
- Volume Controller
k8s.io/kubernetes
Building CCM was not Enough

- Migration from KCM -> CCM
- Migration from Cloud Provider Storage -> CSI
- CCM as a buildable artifact
- Code divergence between KCM and CCM
- Removing existing cloud providers from k8s.io/kubernetes
- Governance for Kubernetes cloud providers
- Ownership of “Cloud Provider” APIs/Standards
Why out-of-tree?

- Cleaner release CHANGELOG in k8s.io/kubernetes
- Only install what you need
- Smaller binary sizes (kube-apiserver, kube-controller-manager, kubelet)
- Faster development cycle for each cloud provider
SIG Cloud Provider

- Maintains the “Cloud Provider Interface”
- Overall architecture for cloud providers in the ecosystem
- Owns cloud-controller-manager
- Owns “cloud specific” controllers
- Project governance for cloud providers
Code Ownership
subprojects:
- name: kubernetes-cloud-provider
  owners:
  - https://raw.githubusercontent.com/kubernetes/cloud-provider/master/OWNERS
  - https://raw.githubusercontent.com/kubernetes/kubernetes/master/staging/src/k8s.io/cloud-provider/OWNERS
- name: cloud-provider-gcp
  owners:
  - https://raw.githubusercontent.com/kubernetes/cloud-provider-gcp/master/OWNERS
- name: cloud-provider-openstack
  owners:
- name: cloud-provider-vsphere
  owners:
- name: cloud-provider-extraction
  owners:
  - https://raw.githubusercontent.com/kubernetes/community/master/sig-cloud-provider/cloud-provider-extraction/OWNERS
  meetings:
  - description: Weekly Sync removing the in-tree cloud providers led by @cheftako and @d-nishi
    day: Thursday
    time: "13:30"
    tz: "PT (Pacific Time)"
    frequency: weekly
    url: https://docs.google.com/document/d/1KlsGgNXQsPeELCeF_q-f0h0CEGSe20xiwvcR2LNYM/edit
Subprojects & Working Groups
Cloud Provider Extraction Subproject

- Removing all existing cloud providers from k8s.io/kubernetes
  - Without breaking API guarantees
  - Very little divergence of behaviour from controllers
  - “Smooth Transition”

- Leads:
  - Nishi Davidson (AWS)
  - Walter Fender (Google)
Cloud Provider Extraction Subproject

```
k8s.io/kubernetes/pkg/cloudprovider/
   providers
     aws
     azure
     cloudstack
     gce
     openstack
     ovirt
     photon
     vsphere
```
Cloud Provider Extraction Subproject

```
 k8s.io/kubernetes/staging/src/k8s.io/
  ├── cloud-provider
  │    ├── cloud-provider-aws
  │    ├── cloud-provider-azure
  │    ├── cloud-provider-cloud-stack
  │    ├── cloud-provider-gcp
  │    ├── cloud-provider-openstack
  │    ├── cloud-provider-ovirt
  │    └── cloud-provider-cloudstack
  │         └── cloud-provider-photon
  │          └── cloud-provider-vsphere
```
Cloud Provider Extraction Subproject

- cloud-provider
  - cloud-provider-aws
  - cloud-provider-azure
  - cloud-provider-cloud-stack
  - cloud-provider-gcp
  - cloud-provider-openstack
  - cloud-provider-ovirt
  - cloud-provider-cloudstack
  - cloud-provider-photon
  - cloud-provider-vsphere

- cloud-provider
  - cloud-provider-aws
  - cloud-provider-azure
  - cloud-provider-cloud-stack
  - cloud-provider-gcp
  - cloud-provider-openstack
  - cloud-provider-ovirt
  - cloud-provider-cloudstack
  - cloud-provider-photon
  - cloud-provider-vsphere
Cloud Provider Extraction Subproject

k8s.io/

- cloud-provider
- cloud-provider-alibaba
- cloud-provider-aws
- cloud-provider-azure
- cloud-provider-cloud-stack
- cloud-provider-gcp
- cloud-provider-openstack
- cloud-provider-ovirt
- cloud-provider-cloudstack
- cloud-provider-photon
- cloud-provider-vsphere
LTS Working Groups

- Exploring options around supporting “Long Term Support Distributions of Kubernetes”
- “Cloud Providers as a Distribution”
- [https://github.com/kubernetes/community/pull/2911](https://github.com/kubernetes/community/pull/2911)
Governance
Cloud Providers as Subprojects
Cloud Providers as Subprojects

- A SIG per Cloud Provider was not sustainable
- Folding ownership of all cloud providers under 1 SIG, this is a work in progress
  - all cloud provider repos should be subprojects of SIG Cloud Provider
    - requires “smooth” migration.
New Cloud Providers in Kubernetes

- Conformance certified
- Reporting conformance to testgrid
- Well documented
- User experience reports
- Well tested/used CCM
- Tech leads are members of the Kubernetes org
SIG Challenges
APIs for ALL Clouds
Migrations are Slow
Project Governance
Deep Dive: SIG Cloud Provider

- Cloud Abstractions/APIs in Kubernetes
- What do the various cloud controllers actually do?
- Migration of **KCM** to **CCM** in production clusters
- Migration of code outside of [k8s.io/kubernetes -> k8s.io/cloud-provider](https://k8s.io/cloud-provider)
- Addressing tech debt
Questions & Discussions