



KubeCon



CloudNativeCon

North America 2022

BUILDING FOR THE ROAD AHEAD

DETROIT 2022

SIG Cloud Provider Update

Michael McCune - Red Hat

Bridget Kromhout - Microsoft



- Michael McCune
- Software Engineer @ Red Hat
- Cloud Infrastructure and Autoscaling
- Kubernetes ecosystem for about 6 years
- elmiko on GitHub



- Bridget Kromhout
- Product Manager @ Microsoft
- Upstream open source
- Kubernetes ecosystem for 6 years?!?
- bridgetkromhout on GitHub

Spoiler Alert

- Removing In-tree Cloud Providers: KEP Excitement!
- Cloud Provider Updates
- SIG Community & More KEPs

Removing In-tree Cloud Providers

KEP 2395: Removing in-tree providers

- Proposes the removal of all in-tree cloud provider code from Kubernetes core
- We are in the “Phase 4 beta” portion of enhancement
- Depends on success of integration testing
- Starting in 1.26 the DisableCloudProvider and DisableKubeletCloudCredentialProvider feature gates will be enabled by default
- Reference:
 - <https://github.com/kubernetes/enhancements/issues/2395>
 - <https://kubernetes.io/blog/2022/09/26/storage-in-tree-to-csi-migration-status-update-1.25/#timeline-and-status>

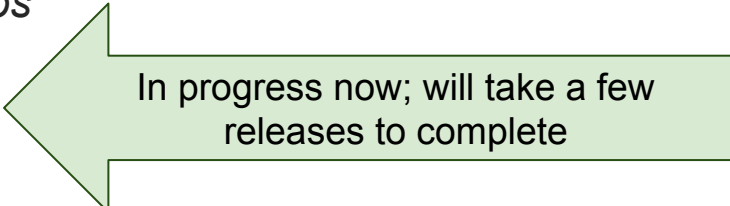
KEP 2395: Removal Phases

1 - *Moving Cloud Provider Code to Staging*

2 - *Building CCM from Provider Repos*

3 - *Migrating Provider Code to Provider Repos*

4 - **Disabling In-Tree Providers**



In progress now; will take a few releases to complete

KEP 2395: Testing and CI

Most prow jobs for Kubernetes CI run on GCP, using the in-tree provider. Having most CI jobs using CCM is a prerequisite for “turning off” in-tree providers.

- Biggest remaining prerequisite to removing in-tree provider code
- Highest priority for SIG in v1.26
- Requirements:
 - ALL k8s.io/kubernetes pre-submit jobs should run with CCM or no cloud provider at all
 - Most (if not all) post-submit jobs should run with CCM or no cloud provider at all
- Reference
 - <https://prow.kubernetes.io/>
 - <https://github.com/kubernetes/kubernetes/tree/master/test>
 - See individual provider repos for their specific tests

KEP 2395: What to do next?

- Learn more about Cloud Controller Managers

<https://kubernetes.io/docs/concepts/architecture/cloud-controller/>

- Study the migration process (including Highly Available control planes)

<https://kubernetes.io/docs/tasks/administer-cluster/controller-manager-leader-migration/>

- Plan your migrations to be completed in the next few releases!

CCM Migration

- We built an operator

<https://github.com/openshift/cluster-cloud-controller-manager-operator>

- Encodes our specific concerns regarding migration
 - Hybrid cloud
 - Automate highly available migration for live clusters
- Heavyweight solution, but highlights power of Kubernetes abstractions

Cloud Provider Updates

AWS Provider Update

- Cloud-provider-aws, ecr-credential-provider and migration from in-tree
 - Recent release: v1.25.1
 - Recent releases include bug fixes
 - Working on artifact builds for ecr-credential-provider
- AWS IAM Authenticator
 - Recent releases: v0.5.10, v0.6.0
 - Working on v0.6.1 release (bug in v0.6.0). Version 0.6 comes with improved SSO support.
- AWS Load Balancer Controller
 - Recent release: v2.4.4
 - Recent releases include bug and CVE fixes
- ACK (AWS Controllers for Kubernetes)
- CSI

Azure Cloud Provider Update

<https://kubernetes-sigs.github.io/cloud-provider-azure/>



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Recent Achievements

- Migrated all test-infra jobs from aks-engine to capz
- VMSS Flex would be supported in v1.26.0 release
- Helm charts have been added to deploy cloud-provider-azure
- Improved error handling for ARM/VMSS/SLB exceptions
- Other new features: disable FloatingIP, cross-subscription network resources with MSI, PublicIP prefix for LB IP.
- PremiumV2 disk public preview on Azure Disk CSI driver
- Blob CSI driver addon public preview on AKS
- Azure Lustre CSI Driver public preview

What's Next

- Dual-stack IPv4/IPv6 networking
- Perf improvements with IP based SLB
- Operation tracing
- Azure SDK track2 migration
- CSR auto approver
- Remove Azure Disk in-tree driver in v1.26 (CSI migration for Azure Disk is finally done, after 4 years of work!)
- GA of Azure File in-tree driver to CSI migration in v1.26
- SMB multi-channel support
- blobfuse2 support on Blob CSI driver

GCP Provider Update

Recent Developments:

- On-going work to update k8s.io/kubernetes CI to use GCP cloud controller manager
- kubelet credential provider plugin for GCR images
- “Leader Migration API” for safe migration of kube-controller-manager to cloud-controller-manager in HA clusters

What's Next:

- Establish a release policy for cloud controller manager images
- Improving documentation
- Testing, testing, testing!

IBM Cloud Provider Update

Cloud Provider SIG sub-project for building, deploying, maintaining, supporting, and using Kubernetes on IBM Public and Private Clouds

- #sig-cloud-provider, #provider-ibmcloud, [Monthly meeting](#), [Google group](#)

GitHub repos under the Provider IBM Cloud

- [Cloud Provider](#) - CCM implementation
- [Cluster API](#) - Kubernetes Cluster API implementation
- [VPC Block CSI Driver](#) - Manage lifecycle of IBM VPC Block Data volumes
- [PowerVS Block CSI Driver](#) - Manage the lifecycle of Power Virtual System volumes

IBM Cloud Provider CCM latest updates

- Ongoing work on code refactoring and doc improvements
- OpenShift v4.11 available on IBM Cloud uses CCM – released on Sep 8, 2022
- Kubernetes v1.25 available on IBM Cloud uses CCM – released on Oct 6, 2022

Project contacts:

John Kasperski, Sahdev Zala, Brad Topol, Prajyot Parab, Arashad Ahmed

VMWare Provider Update

<https://github.com/kubernetes/cloud-provider-vsphere>

Recent Developments:

- 1.25 released with several improvements and bug fixes
 - Helm chart installation problem resolved
 - CredentialsManager accepts alternative secret format for IPV6 cases
 - Won't delete VM that is temporarily unavailable.
- E2E test pipeline set up.

What's Next:

- Improving documentation
- Testing

SIG Community

- Who are we?
 - Nick Turner - AWS - chair / technical lead - @nckturner on GitHub
 - Andrew Sy Kim - Google - chair / technical lead - @andrewsykim on GitHub
 - Walter Fender - Google - technical lead - @cheftako on GitHub
- What other SIGs do we interact with frequently?
 - SIG Auth
 - SIG Network
 - SIG Node

Roadmap

- KEP 2395: Removing In-tree Providers, 1.26 for first attempt.
- KEP 2699: Add Webhook Hosting to CCM, in process, help us review!
- KEP 2133: Kubelet Credential Provider, adds new functionality, check it out!

KEP 2699: Adding Webhooks

- Proposes common webhook pattern for Cloud Controller Managers
- Inspired by need for PersistentVolumeLabel admission controllers
- Provides opportunity to run fewer processes in the control plane
- Reference:
 - <https://github.com/kubernetes/enhancements/issues/2699>

KEP 2133: Kubelet Credential Provider

Kubelet has a built-in credential mechanism to fetch image pull credentials for AWS, Azure, and GCP. A pluggable credential provider was added in v1.20 so kubelet can request image pull credentials for any registry by executing plugin binaries.

- Collaboration with SIG Node
- See the docs for configuring [kubelet credential provider](#)
- In-tree credential mechanism for AWS, Azure, and GCP will be removed in a future release.
- Feature state:
 - Alpha in 1.20
 - Beta in v1.24
 - GA in v1.26

How to get involved!

- Check out the SIG community repo
 - <https://github.com/kubernetes/community/tree/master/sig-cloud-provider>
- Attend a SIG meeting
 - Every other Wednesday at 1700 UTC on [Zoom](#)
 - [Our agenda doc](#) (must be subscribed to kubernetes-dev for edit access)
 - [Watch recordings of older meetings](#)
- Join the SIG Cloud Provider Group
 - <https://groups.google.com/g/kubernetes-sig-cloud-provider>
- Reach out in Slack on the #sig-cloud-provider channel
- Become curious about the core cloud-provider library
 - <https://github.com/kubernetes/cloud-provider>

Thanks for joining!

Come say hi at the SIG Meet and Greet
Friday @ 12:30-2:30 411ABC

See you on Kubernetes Slack in the `#sig-cloud-provider` channel



Please scan to
leave feedback