Intro + Deep Dive: SIG Azure

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How many of you?

Participate in SIG Azure meetings?
Run your clusters on Azure?
Use aks-engine?
Use AKS?
Came here wanting to help?
Came here with questions you want answered?
Who is SIG Azure?

A Special Interest Group for building, deploying, maintaining, supporting, and using Kubernetes on Azure.

Chairs:

• Craig Peters, Microsoft
• Stephen Augustus, VMware

Technical Leads:

• Pengfei Li, Microsoft
• Kal Khendiak, Microsoft

Ref: https://github.com/kubernetes/community/tree/master/sig-azure
Why does this SIG exist?

Implement and maintain Azure APIs in the Kubernetes Cloud Controller Manager

Why do the cloud specific SIGs exist?

• All the cloud providers are moving to subprojects of SIG Cloud Provider, with subprojects moving to appropriate other sigs:
  • Cloud Provider Azure \(\rightarrow\) SIG Cloud Provider
  • Cluster API Provider Azure \(\rightarrow\) SIG Cluster Lifecycle
  • CSI Drivers Azure \(\rightarrow\) SIG Storage

Refs: https://github.com/kubernetes/community/tree/master/sig-cloud-provider and https://docs.google.com/document/d/1qXeSP5v-4OaS-2LA789kTwAT3Xn9c528FLIsWp6GaVw/edit?usp=sharing
Recent Accomplishments

- Out-of-tree Cloud Provider: alpha of Azure cloud-controller-manager
  [https://github.com/kubernetes/cloud-provider-azure](https://github.com/kubernetes/cloud-provider-azure)
- E2e testing of cloud-provider-azure (using aks-engine)
- Managed Service Identity support
- Azure Disk: alpha of azure disk and azure file CSI drivers with support for Ultra SSD, Standard SSD, and Premium Azure Files
- Azure Load Balancer configuration
- Autoscaling, Virtual Machine Scale Sets, Availability Zones and cross resource group nodes were moved from Alpha to Beta

Ref: [https://kubernetes.io/docs/setup/release/notes/#azure](https://kubernetes.io/docs/setup/release/notes/#azure)
Plans

Cluster API Provider Azure (out of tree)

Secrets-store-csi-driver

AAD Pod Identity

Kubernetes on CosmosDB

IP v4/v6 Dual Stack
The Cluster API brings declarative, Kubernetes-style APIs to cluster creation, configuration and management.

- Finish documenting the out-of-tree Azure cloud provider
Integrates secrets stores with Kubernetes via a CSI volume

- Mounts secrets/keys/certs to pod using a CSI volume
- Supports CSI Inline volume (Kubernetes version v1.15+)
- Supports mounting multiple secrets store objects as a single volume
- Supports pod identity to restrict access with specific identities (WIP)
- Supports multiple secrets stores as providers:
  - Azure Keyvault
  - Hashicorp Vault
- [https://github.com/deislabs/secrets-store-csi-driver](https://github.com/deislabs/secrets-store-csi-driver)
AAD Pod Identity (preview)

Enables applications running in pods on Azure to securely access cloud resources by leveraging Azure Active Directory (AAD).

- Configure identities and bindings, to match pods with identities
- Pods will have discrete identity from the node
- Try it out!
Cosmos DB supports the etcd API (https://docs.microsoft.com/en-us/azure/cosmos-db/etcd-api-introduction)

Allows you to use Azure Cosmos as the backing store for Kubernetes

Implements the wire level protocol of etcd

API servers use Cosmos just like it would for a locally installed etcd


Try it out!
IPv4/IPv6 Dual-stack Kubernetes

- Work in Progress towards alpha
- Enabled multi-address family multi-interface pods
- Multi-release change
- First changes scheduled to land in 1.16
- [https://github.com/kubernetes/kubernetes/pull/73977](https://github.com/kubernetes/kubernetes/pull/73977)
- Looking for PR reviews
How can I help?

Join the mailing list and slack channel
Participate in SIG meetings: Wednesdays 16:00 UTC (change coming)
Review PRs
Pick up items on from the project board: https://github.com/orgs/kubernetes/projects/12
Questions?