

Deployment and Management in the Age of Cloud Distributed Applications

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Agenda

- Software deployment through the years
- Redefining the application
- Terraform
- Kubernetes Service Catalog
- Cloud Native Application Bundles (CNAB)

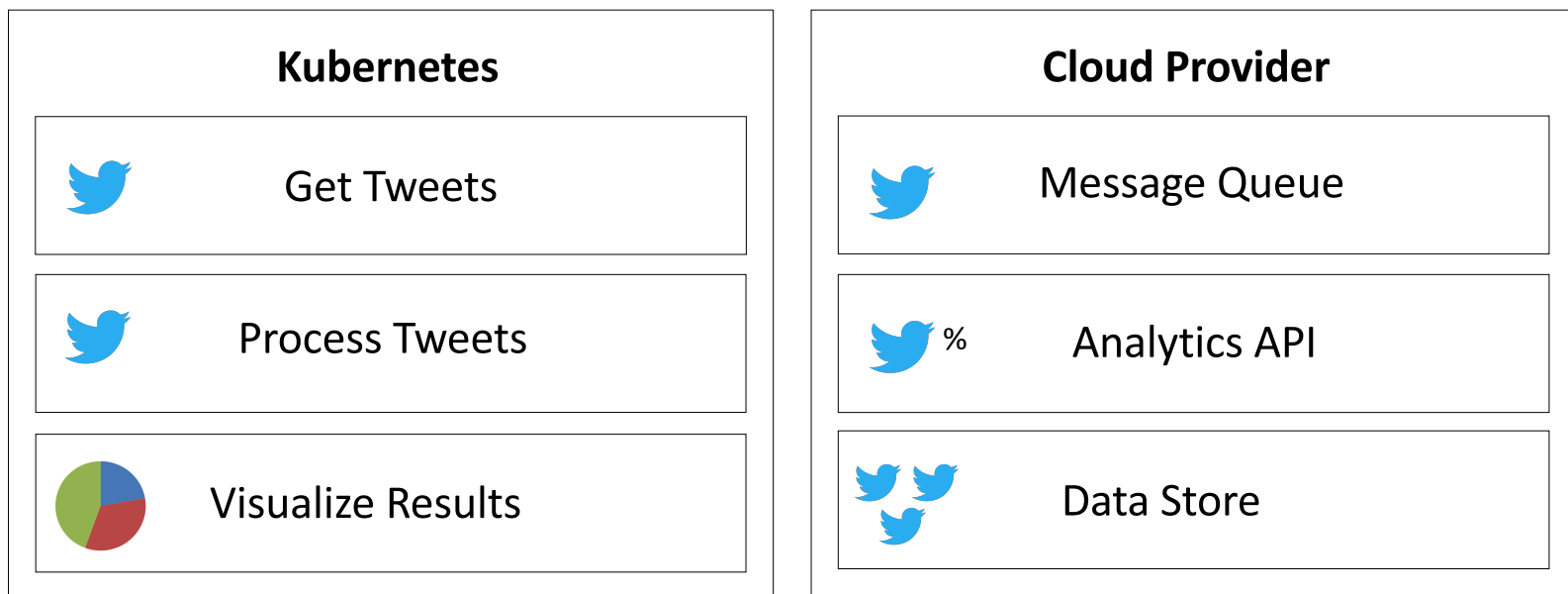
Deployment

All of the activities that make a software system available for use. *

- Operating System
- Application
- Software Updates
- Infrastructure
- Access Control
- Policy

https://en.wikipedia.org/wiki/Software_deployment *

Rethinking the application



Application - <https://github.com/Azure-Samples/helm-charts/tree/master/chart-source/twitter-sentiment>

Cloud Distributed Applications

A single application can be built / deployed across a diverse technical stack (Kubernetes, functions, hosted data store, etc.).

Deployment and management challenges

- Multiple deployment routines
- Multiple management tools
- Secrets management
- Instance management

Terraform

Terraform codifies APIs into providers that deploy infrastructure and other software related assets.

- Terraform 0.12.0 recently released
- Providers for major clouds ++
- Extensible through custom providers

Terraform State / Workspaces

State and Workspaces can provide an instance management experience.

- State: Clear text representation of current configuration
- Workspace: Namespace based state isolation

Terraform: My Impressions

- Instance Management: State and Workspaces
- Secrets Management: State and built in tooling
- Maturity / Community: High
- Flexibility / Extensibility: Medium

Demo

Terraform

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Kubernetes Service Catalog

Open Service Broker

API specification for a standard cloud provider interface.

- Framework for provisioning and accessing managed cloud services
- Specifies five operations (provision, bind, unbind, deprovision, update)



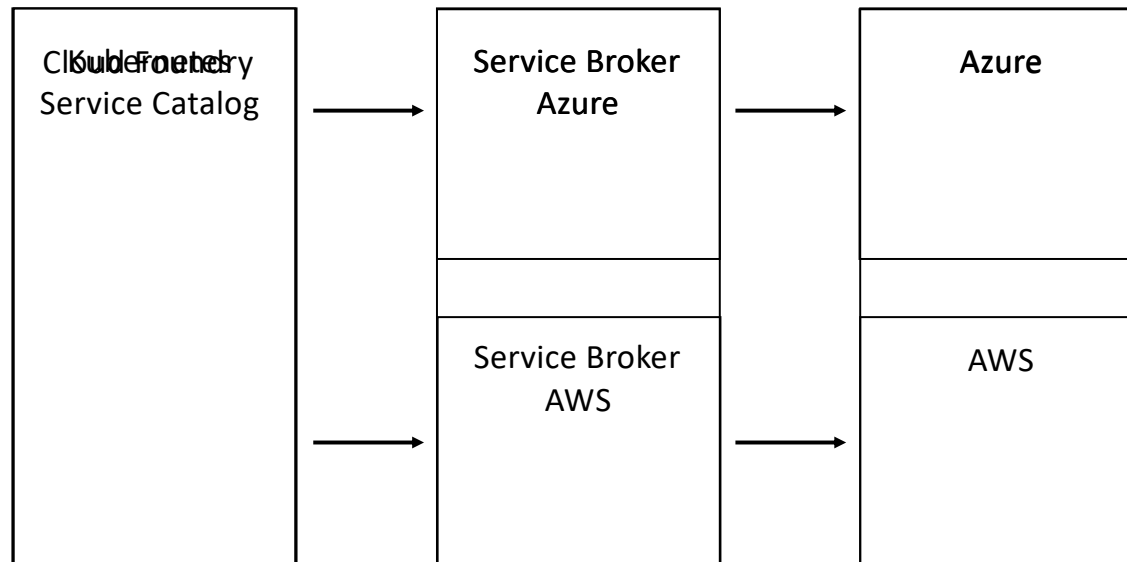
Kubernetes Service Catalog

Enlightens Kubernetes so that it "speaks" Open Service Broker.

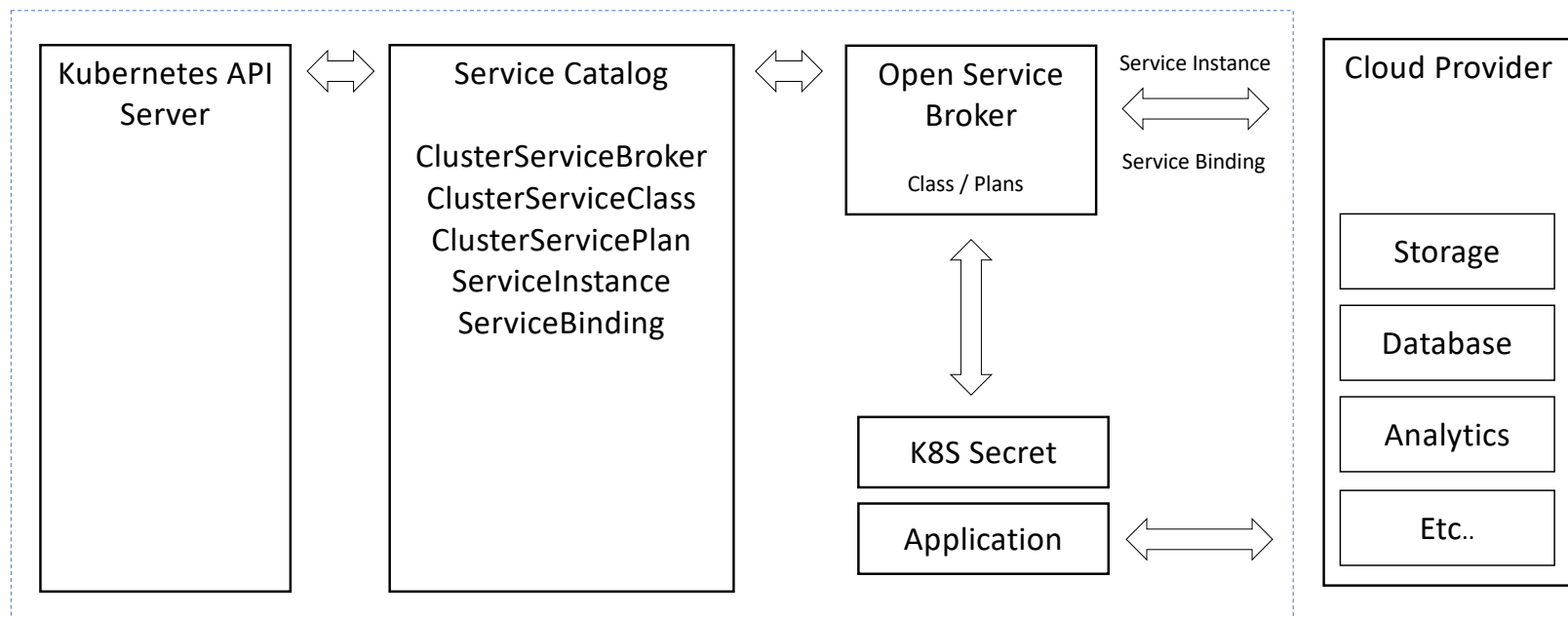
Adds five new types to Kubernetes

- ClusterServiceBroker
- ClusterServiceClass
- ClusterServicePlan
- ServiceInstance
- ServiceBinding

How do these components line up



API Diagram



Source - <https://kubernetes.io/docs/concepts/extend-kubernetes/service-catalog/>

SVCAT: My Impressions

- Instance Management: Helm
- Secrets Management: Kubernetes
- Maturity / Community: Low
- Flexibility / Extensibility: Low

Demo

Kubernetes Service Catalog

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Cloud Native Application Bundles (CNAB)

A package format specification for bundling, installing, and managing cloud distributed applications.

- Thin / Thick Bundle
- OCI image format compliant
- Signed

Think along the lines of a make file for cloud distributed applications.

Bundle components

Bundle specification / components:

- bundle.json file: bundle metadata
- Invocation Image: container image for bootstrapping
- Bundle Runtime: payload entry point (ex: bash script)

CNAB: My Impressions

- Instance Management: Multiple tools
- Secrets Management: Flexible
- Maturity / Community: Low
- Flexibility / Extensibility: High

Demo

Cloud Native Application Bundles

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