



TUGA IT

SUMMER EDITION

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The background of the slide is a faded, grayscale image of a historic building with multiple domes and towers, possibly a cathedral or fortress. A stone bridge with a railing leads towards the building from the foreground. The scene is set against a hazy sky and some distant trees on the right.

Consuming cloud services with the Kubernetes Service Catalog

Neil Peterson | @nepeters

Agenda

- Current trends in application architecture
- Kubernetes (beyond containers)
- Integrating Kubernetes with cloud providers (Service Catalog)
- Closer look at Service Catalog objects
- End to end demo

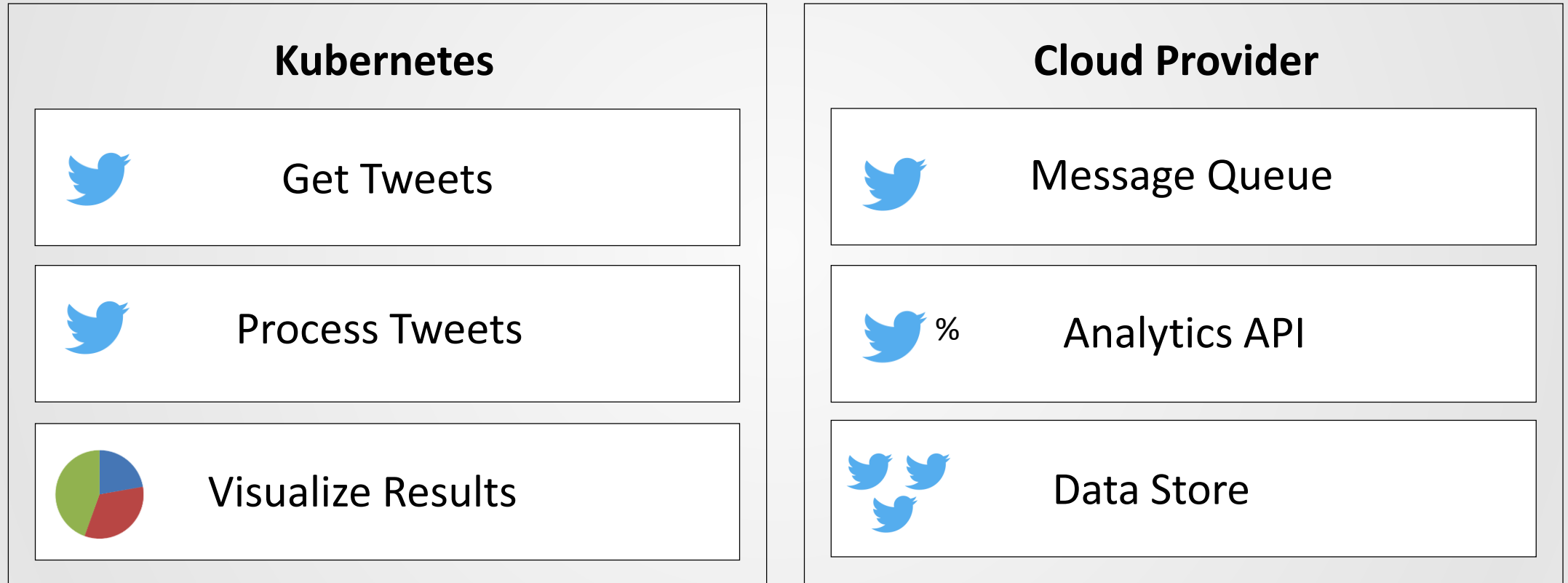
Technology spanning applications

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

Deployment and management challenges

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

Example application



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

Kubernetes

Kubernetes: a platform for running applications (not just containers)

- Yes, container management is front and center
- Extensible API allows for cloud native integrations
- Runtime for building and managing applications
- Manage lifecycle, availability, resourcing, scale, and security
- So, how can Kubernetes integrate with cloud providers?

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

Provision cloud services (and others) from Kubernetes

- Extends Kubernetes so that it "speaks" open service broker
- Aggregated API extension
- Adds five new types to Kubernetes
 - ClusterServiceBroker
 - ClusterServiceClass
 - ClusterServicePlan
 - ServiceInstance
 - ServiceBinding
- Two components API Server and Controller

Service Broker (ClusterServiceBroker)

Registered endpoint or API for provisioning managed services.

- Handles the actual service deployment
- Support for multiple brokers
- Each major cloud provider has a service broker

Service Class / Plans (ClusterServiceClass / ClusterServicePlan)

Catalog of cloud provider offerings.

- Service Class – offering type (MySQL, storage, analytics API)
- Service Plan – Service Class tier (premium, standard, enterprise)

Service Instance (ServiceInstance)

Represents an instance of a managed cloud service.

- Intent to provision cloud service
- Watched by service catalog controller
- Service is created by service broker

```
apiVersion: servicecatalog.k8s.io/v1beta1
kind: ServiceInstance
metadata:
  name: azure-storage-demo
  namespace: default
spec:
  clusterServiceClassExternalName: azure-storage
  clusterServicePlanExternalName: blob-container
  parameters:
    location: eastus
    resourceGroup: osba-azure-storag-demo
```

Service Binding (ClusterServiceBinding)

Request for credentials and / or connection strings for a service instance.

- Intent to use a cloud service
- Watched by service catalog controller
- Secrets are stored in a Kubernetes secret

```
apiVersion: servicecatalog.k8s.io/v1beta1
kind: ServiceBinding
metadata:
  name: azure-storage-binding
  namespace: default
spec:
  instanceRef:
    name: azure-storage-demo
  secretName: osba-azure-storag-demo
```

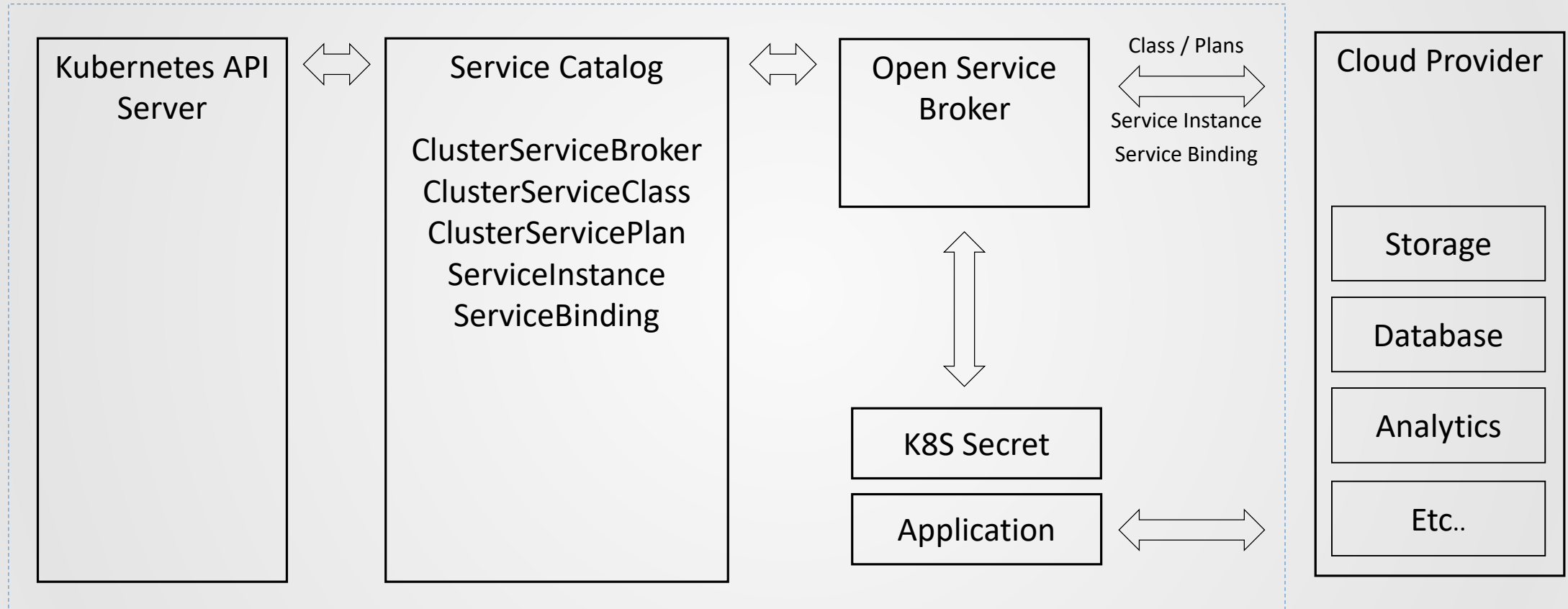
Application Consumption

How are service instances used?

- Define environment variables
- Get values from binding secret

```
apiVersion: apps/v1beta1
kind: Deployment
metadata:
  name: osba-storage-demo
spec:
  replicas: 1
  template:
    metadata:
      labels:
        app: osba-storage-demo
    spec:
      containers:
        - name: osba-storage-demo
          image: neilpeterson/osba-storage-demo
          ports:
            - containerPort: 80
          env:
            - name: AZURE_STORAGE_ACCT
              valueFrom:
                secretKeyRef:
                  key: storageAccountName
                  name: osba-azure-storage-demo
            - name: AZURE_KEY
```

API Diagram



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

SVCAT

Command line tool for managing service catalog objects.

- Not a requirement, simply a convenience tool
- Performs common tasks from the command line / ad hock
- Installed separately ([instructions](#))

Some notes

Some notes based on my experience.

- Service catalog is still considered beta
- Service brokers release on own schedule
- Not all cloud provider services may be present
- Cloud service take time to provision
- Rough edges on some operations

Demo

- <https://docs.microsoft.com/en-us/azure/aks/integrate-azure>
- <https://github.com/neilpeterson/open-service-broker-azure-samples>
- <https://github.com/Azure-Samples/helm-charts/tree/master/chart-source/twitter-sentiment>



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