

Clusters as Cattle

Illya Chekrygin
Founding Engineer, Upbound



ichekrygin



illya_chekrygin

Multicloud

- Myth or Reality
- Is it good or bad idea
- What are we trying to solve
- What are the options
- How do you multi-cloud
- What is the future



Cloud Computing

- Predominate
- On demand
- Business oriented
- World-class managed services
- Global scale
- Pay-Per-Use



Cloud Providers

- Competitive
- Open-Source adopters
- Closed-Source offering
- Lock In



Google Cloud Platform



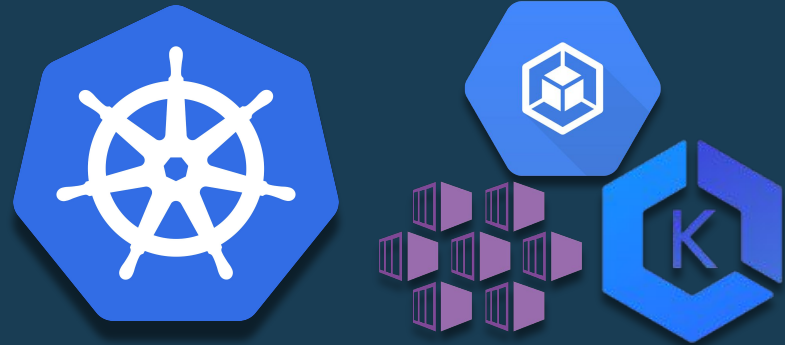
Managed Services

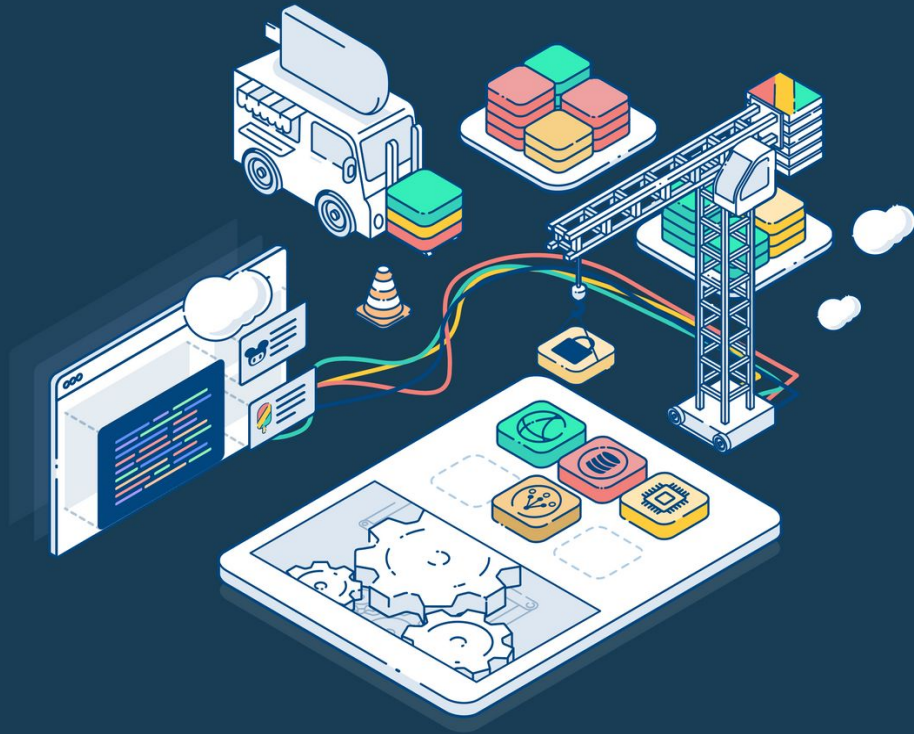
- Dependencies
- Worry free (almost)
- Hands off (almost)
- You get an SLA
- For which you Pay
- Can K8S Help?



Crosscloud Portability

- What is it?
- Do you need it?
- How do you achieve it?

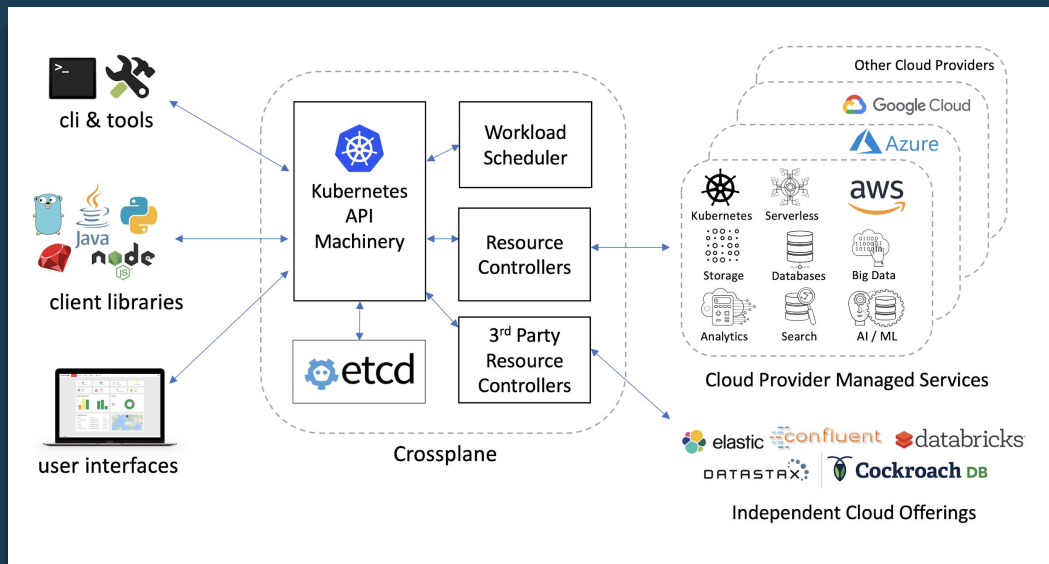




Crossplane

Crossplane

- Declarative API
- Portable Resource Abstractions
- Based on and inspired by Kubernetes
- Separation of Concerns
- Increased reusability
- Workload Scheduler
 - Topology aware
 - Policy governed



Managed Resources as CRD's

- Cloud Provider
 - AWS, Azure, GCP (initially)
- Managed Resource
 - RDS Instances, Azure Database for MySQL Servers, Cloud SQL Instances
 - EKS, AKS, GKE
- Resource Classes
- Resource Claims (or Abstract Resources)
 - MySQLInstance, KubernetesCluster

Cloud Provider as a Resource

- Secret to store creds
- Provider with secret references
- Controller
 - validation

```
---  
# AWS Admin account credentials  
apiVersion: v1  
kind: Secret  
metadata:  
  name: demo-aws-creds  
  namespace: crossplane-system  
type: Opaque  
data:  
  credentials: W2RlZVERYlongBase64encodedVaLue  
---  
# AWS Provider with secret reference  
apiVersion: aws.crossplane.io/v1alpha1  
kind: Provider  
metadata:  
  name: demo-aws  
  namespace: crossplane-system  
spec:  
  credentialsSecretRef:  
    key: credentials  
    name: demo-aws-creds  
  region: us-east-1
```

Managed Service as a Resource

- Specific Resource
- Strongly Typed
- Provider Reference
- Controller
 - Provision
 - Connection Secret
 - Track Status

```
apiVersion: database.azure.crossplane.io/v1alpha1
kind: MySQLServer
metadata:
  labels:
    name: crossplane-wordpress-mysql
spec:
  providerRef:
    name: azure-sql-provider
  connectionSecretRef:
    name: demo-database-connection
  resourceGroupName: group-westus-1
  location: West US
  pricingTier:
    tier: Basic
    vcores: 1
    family: Gen4
  storageProfile:
    storageGB: 25
    backupRetentionDays: 7
    geoRedundantBackup: false
  adminLoginName: myadmin
  version: "5.7"
  sslEnforced: false
```

Resource Claims

- Class Reference
- Additional Specifications
- Controller
 - Provision
 - Secret
 - Status

```
apiVersion: compute.crossplane.io/v1alpha1
kind: KubernetesCluster
metadata:
  name: demo-cluster
  namespace: crossplane-system
spec:
  classReference:
    name: standard-cluster
    namespace: crossplane-system
  clusterVersion: "1.11"
```

Resource Claim - MySQLInstance

- Class Reference
- Additional Specifications
- Controller
 - Provision
 - Secret
 - Status

```
## WordPress MySQL Database Instance
apiVersion: storage.crossplane.io/v1alpha1
kind: MySQLInstance
metadata:
  name: demo-cloud-mysql
  namespace: default
spec:
  classReference:
    name: standard-cloud-mysql
    namespace: crossplane-system
  engineVersion: "5.7"
```

Resource Claim - Kubernetes Cluster

- Class Reference
- Additional Specifications
- Controller
 - Provision
 - Secret
 - Status

```
## WordPress MySQL Database Instance
apiVersion: storage.crossplane.io/v1alpha1
kind: MySQLInstance
metadata:
  name: demo-cloud-mysql
  namespace: default
spec:
  classReference:
    name: standard-cloud-mysql
    namespace: crossplane-system
  engineVersion: "5.7"
```

Resource Classes

- Provisioner
- Provider Reference
- Properties
- Reclaim Policy

```
apiVersion: core.crossplane.io/v1alpha1
kind: ResourceClass
metadata:
  name: standard-azure-cluster
  namespace: crossplane-system
parameters:
  resourceGroupName: group-westus-1
  location: Central US
  version: "1.11.4"
  nodeCount: "1"
  nodeVMSize: Standard_B2s
  dnsNamePrefix: crossplane-aks
  disableRBAC: "false"
provisioner: akscluster.compute.azure.crossplane.io/v1alpha1
providerRef:
  name: demo-azure
reclaimPolicy: Delete
```

Resource Class - CloudSQL

```
## Crossplane MySQL Resource Class for GCP (CloudSQL)
apiVersion: core.crossplane.io/v1alpha1
kind: ResourceClass
metadata:
  name: standard-gcp-mysql
  namespace: crossplane-system
parameters:
  tier: db-n1-standard-1
  region: us-west2
  storageType: PD_SSD
provisioner: cloudsqlinstance.database.gcp.crossplane.io/v1alpha1
providerRef:
  name: demo-gcp
reclaimPolicy: Delete
```


Workload

- Required Resources
 - Secrets
- Destination Cluster
 - Automatic Scheduling (Dynamic)
 - Designated (Assigned)
- Payload
 - Deployment
 - Service






Demo

Crossplane Vision

- Open cloud-computing platform
- Open control plane for open cloud
- More choices
- Extensible
- Inclusive



Join us

- We need your help
-  github.com/crossplaneio/crossplane
-  <https://crossplane.io/>
-  [Crossplane_io](#)

