Intro: Peter ONeill

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- Socials: @peteroneilljr
- About Me:
  - Rock Climbing: My favorite rocks are granite
  - Snowboarding: I'll be on Ikon this season
  - Traveling: I spent 5 years moving across 25 countries

Kubernetes Portability Paradox

Balance

- Speed (Time managing and troubleshooting)
- Flexibility (How quickly can you adapt)
- Dependencies (Do add-ons help or hinder)

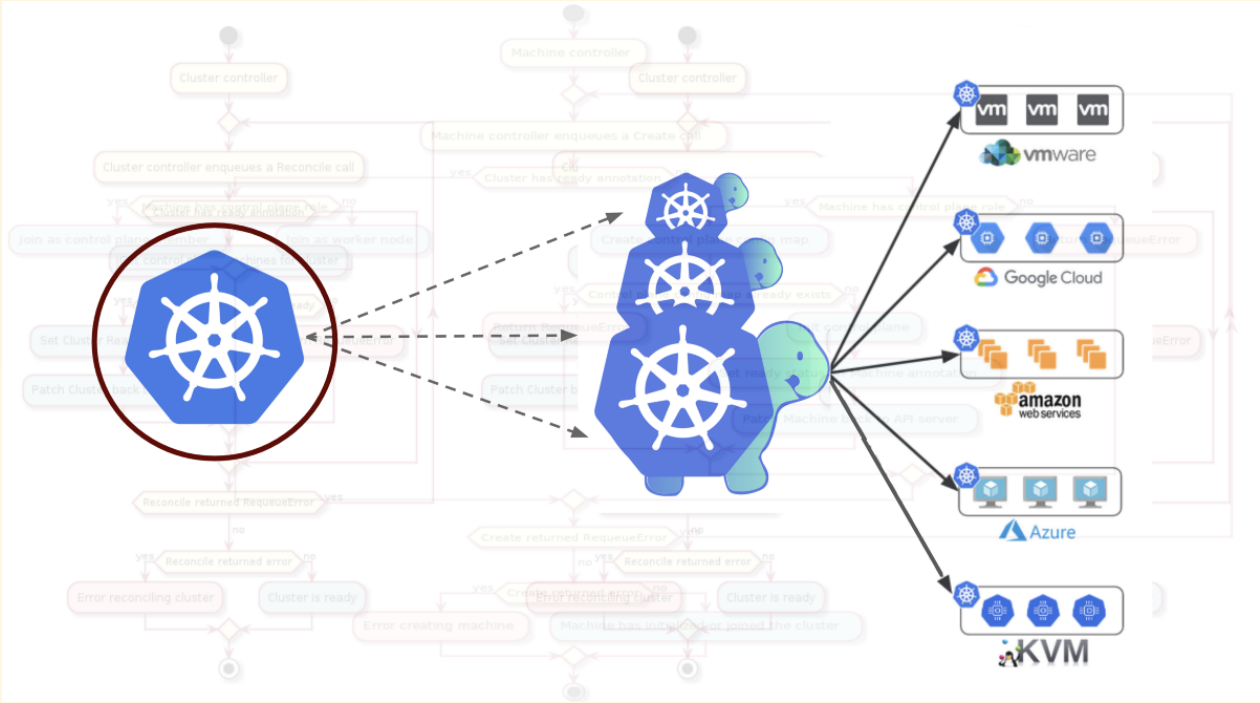
The promise of Kubernetes

originally said in 1995 (I think), Kubernetes 2014

W.O.R.A: Fiction or Reality?

Does the k8s flavor of the week cause the following?

Rewriting
Refactoring
Repositioning



Agenda

1. Authentication
2. Networking
3. Compute & Memory
4. Storage
5. Service Mesh
6. Compliance and Logging

Interactive, raise your hand if something is nonsense

Authentication

AWS IAM

Azure AD

Google IAM

(Multi-cloud tools Pinnniped & Tremolo)

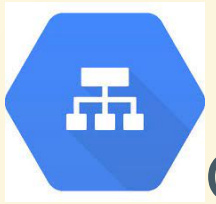
Networking (VPC and Subnets)

- **Speed**: Let the cloud create it
- **Flexibility**: Manage the network yourself
- **Dependency**: Complexity fosters depedency. private endpoints, service connections

Networking (ALBs & Ingress)


AWS ALB


Azure Application Gateway


Google HTTP(S) Load Balancer

Ingress Controller Options

Ingress Controller	Key Features	CRDs	Data Plane
Nginx	SSL, Path-based routing, WebSockets	No	Nginx
Traefik	HTTP/2, gRPC, Let's Encrypt	Yes	Traefik
HAProxy	SSL, Rate limiting	No	HAProxy
Kong	API Gateway features	Yes	Kong
Istio Gateway	Advanced traffic routing	Yes	Envoy
Contour	HTTP/2, Let's Encrypt	Yes	Envoy
Ambassador	API Gateway features	Yes	Envoy
Gloo	Function-level routing	Yes	Envoy

Compute and Memory

Cloud Provider	General Purpose	Compute Optimized	Memory Optimized	GPU Instances	Burstable/Short-lived
AWS (EKS)	m5, m6g	c5, c6g	r5, r6g	p3, g4	t3, t4g
Azure (AKS)	Ds_v3, Ds_v4	Fs_v2	Es_v3, Ms_v2	NC_v3, NV_v4	B-series
Google (GKE)	n1-standard, e2-standard	c2-standard	m2-ultramem	n1-standard with GPUs	Preemptible Instances

- Full parity doesn't exist
- Request and Limits are your best friends
- Know your bottle necks

Node Pools and Autoscaling

Cloud Provider	Autoscaling tool	Serverless Option
AWS (EKS)	Node Groups	Fargate Profiles
Azure (AKS)	Node Pools	Azure Container Instances
Google (GKE)	Node Pools	GKE Autopilot

** I've never tried serverless multi-cloud, if you have let me know your experience.

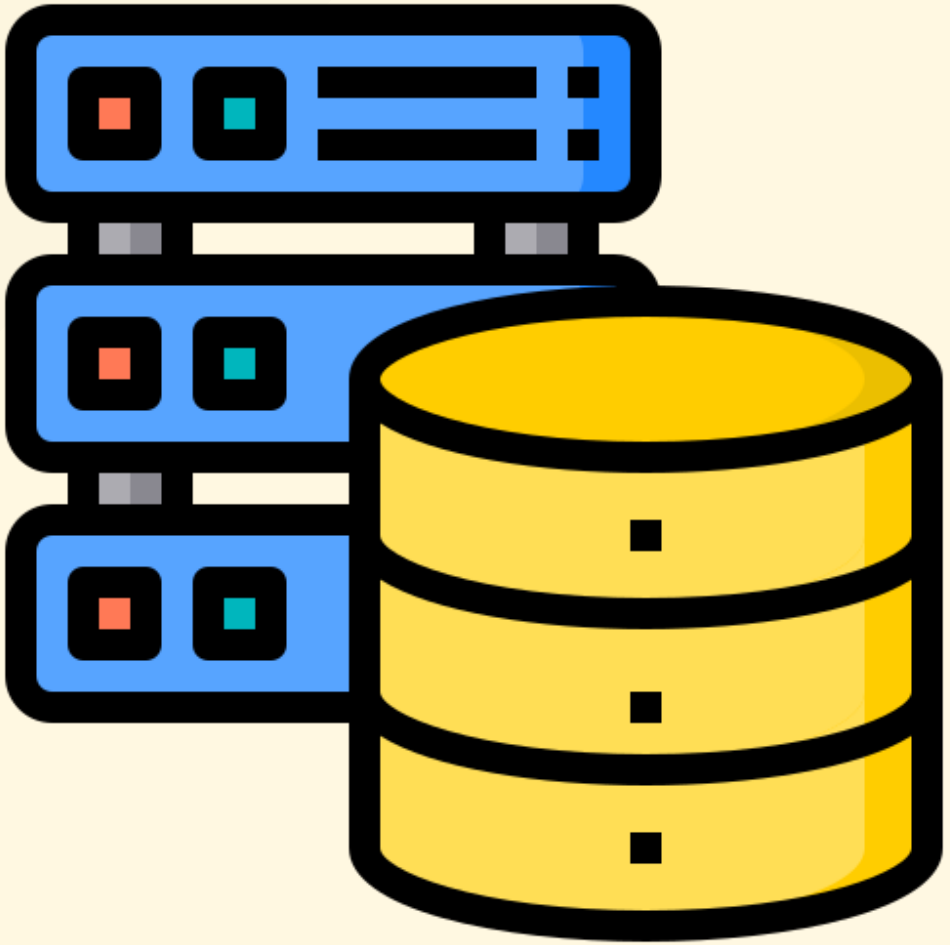
Storage

Feature/Parameter	Amazon EKS (AWS)	Azure AKS	Google GKE
Provisioner	kubernetes.io/aws-ebs	kubernetes.io/azure-disk	kubernetes.io/gce-pd
Default Volume Type	gp2 (General Purpose)	Standard_LRS	pd-standard
High IOPS Option	io1, io2	Premium_LRS	pd-ssd

Storage Class Mismatch: Use Config Maps and Environment Varibles or your Devs won't be happy.

Storage (Stateless)

Cloud Provider	Relational DB Options	High Availability
AWS (EKS)	RDS	Multi-AZ
Azure (AKS)	Azure SQL	Geo-Replication
Google (GKE)	Cloud SQL	Regional Replicas
Any	MySQL, Postgres	*



**Data replication is beyond the scope of this talk.

Service Mesh

Cloud Provider	Native Service Mesh Option	Proxy Used
AWS (EKS)	AWS App Mesh	Envoy
Azure (AKS)	Open Service Mesh	Envoy
Google (GKE)	Istio	Envoy

Non-cloud managed

Service Mesh	Data Plane	Key Features	Community
Linkerd	Custom Proxy	Load balancing, mTLS	CNCF
Kuma	Envoy	Traffic routing, fault injection	Kong
Maesh	Traefik	Traffic splitting, simplicity	Traefik Labs

Compliance and Logging

Feature/Tool	Amazon Web Services (AWS)	Azure	Google Cloud Platform (GCP)
Resource Tracking	AWS Config	Azure Policy	Cloud Security Command Center
Audit Logs	AWS CloudTrail	Azure Monitor	Cloud Audit Logs
Threat Detection	AWS GuardDuty	Azure Security Center	Cloud Security Command Center
Compliance Reports	AWS Artifact	Azure Compliance Manager	Access Transparency
Data Classification	AWS Macie	Azure Information Protection	Cloud Data Loss Prevention (DLP)

Compliance and Logging

Logging Tool	Key Features	Community	Common Integrations
Fluentd	Extensible, Plugin support	CNCF	Elasticsearch, Kibana
Loki	Optimized for Grafana	Grafana Labs	Grafana
Vector	High-performance	Timber.io	Elasticsearch, Splunk
Splunk Connect	Splunk observability	Splunk	Splunk
Filebeat	Lightweight log shipper	Elastic	Elasticsearch, Kibana

**not an exhuastive list

Multi-cluster tools

Multi-Cluster Tool	Key Features	Community	Cloud Support
Rancher	Centralized management, Security	Rancher	AWS, Azure, GCP, On-premises
Argo CD	GitOps, Continuous Delivery	CNCF	Any Kubernetes Cluster
Anthos	Hybrid, Centralized Management	Google Cloud	GCP, AWS, On-premises, Azure (preview)
Spinnaker	Continuous Delivery	Netflix, Google	AWS, Azure, GCP, Kubernetes
Crossplane	Multi-cloud Control Plane	CNCF	AWS, Azure, GCP, Alibaba Cloud

IKEA effect

Article Talk

From Wikipedia, the free encyclopedia

The **IKEA effect** is a cognitive bias in which consumers place a disproportionately high value on products they partially created. The name refers to Swedish manufacturer and furniture retailer IKEA, which sells many items of furniture that require assembly.

A 2011 study found that subjects were willing to pay 63% more for furniture they had assembled themselves than for equivalent pre-assembled items.[1]

**Don't solve problems that have already been solved

Things to remember

1. Don't solve problems that have already been solved
2. Look for vendor nuetral tools if you can
3. Don't make a mess of the cloud, if you do call a call a cloud janitor. (peter@webriot.com)

Thanks for watching