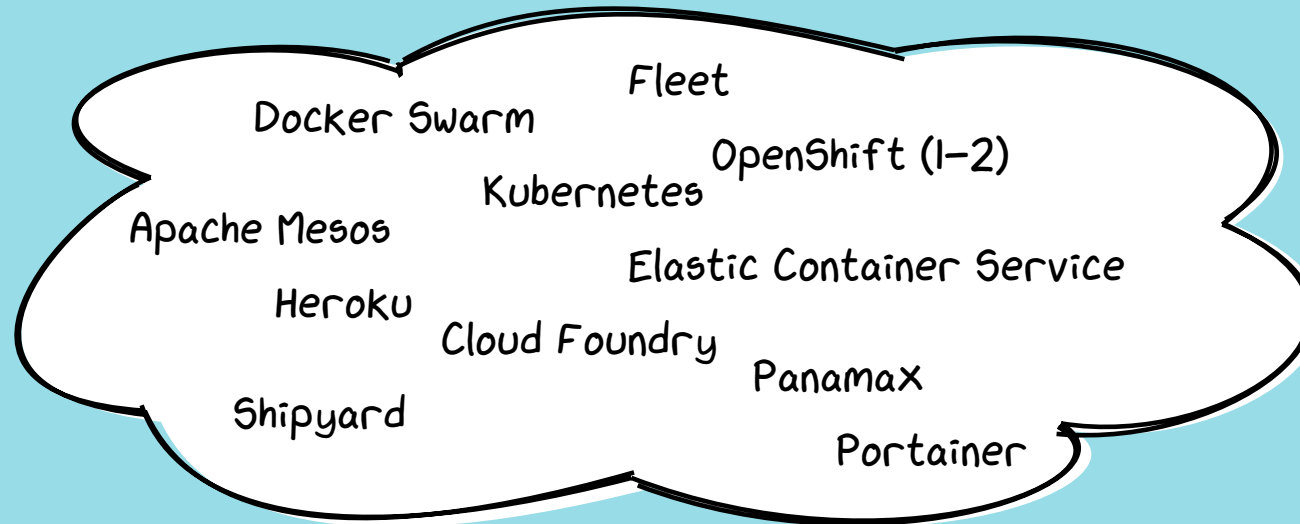


# KUBERNETES AND OPEN SOURCE IN THE CLOUD

Gerald Schmidt

# THE COMPETITION

# ALL HAPPY FAMILIES



The 'orchestration wars' saw a large variety of proprietary and open source offerings.

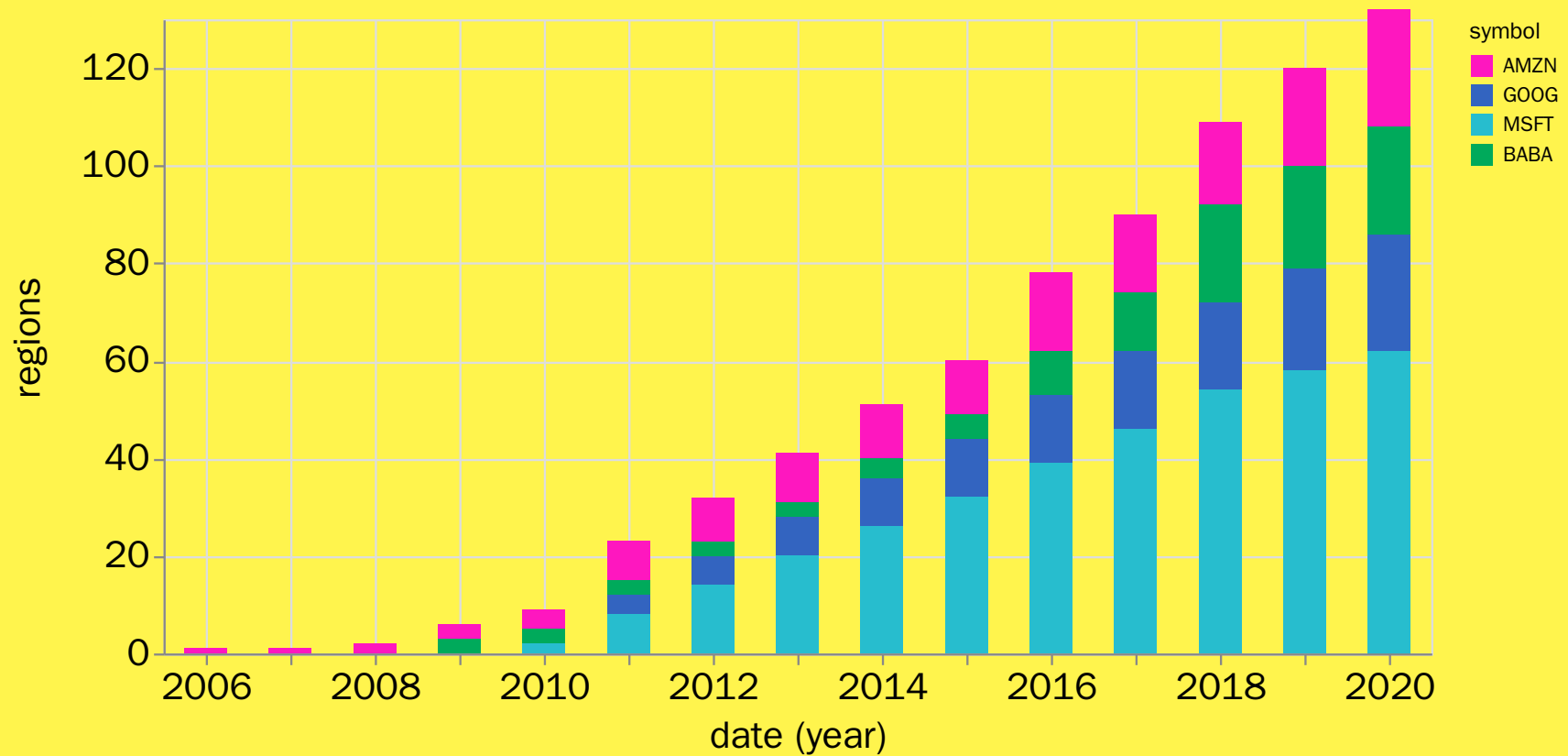
# SPLENDID ISOLATION



When the dust settled, only one of them was left standing.

MEANWHILE IN THE PUBLIC CLOUD

# FIRST MOVER ADVANTAGE



Regions vary significantly in size. Some values have been interpolated.

# FOLLOW FAST, BUT HOW FAST IS FAST ENOUGH?

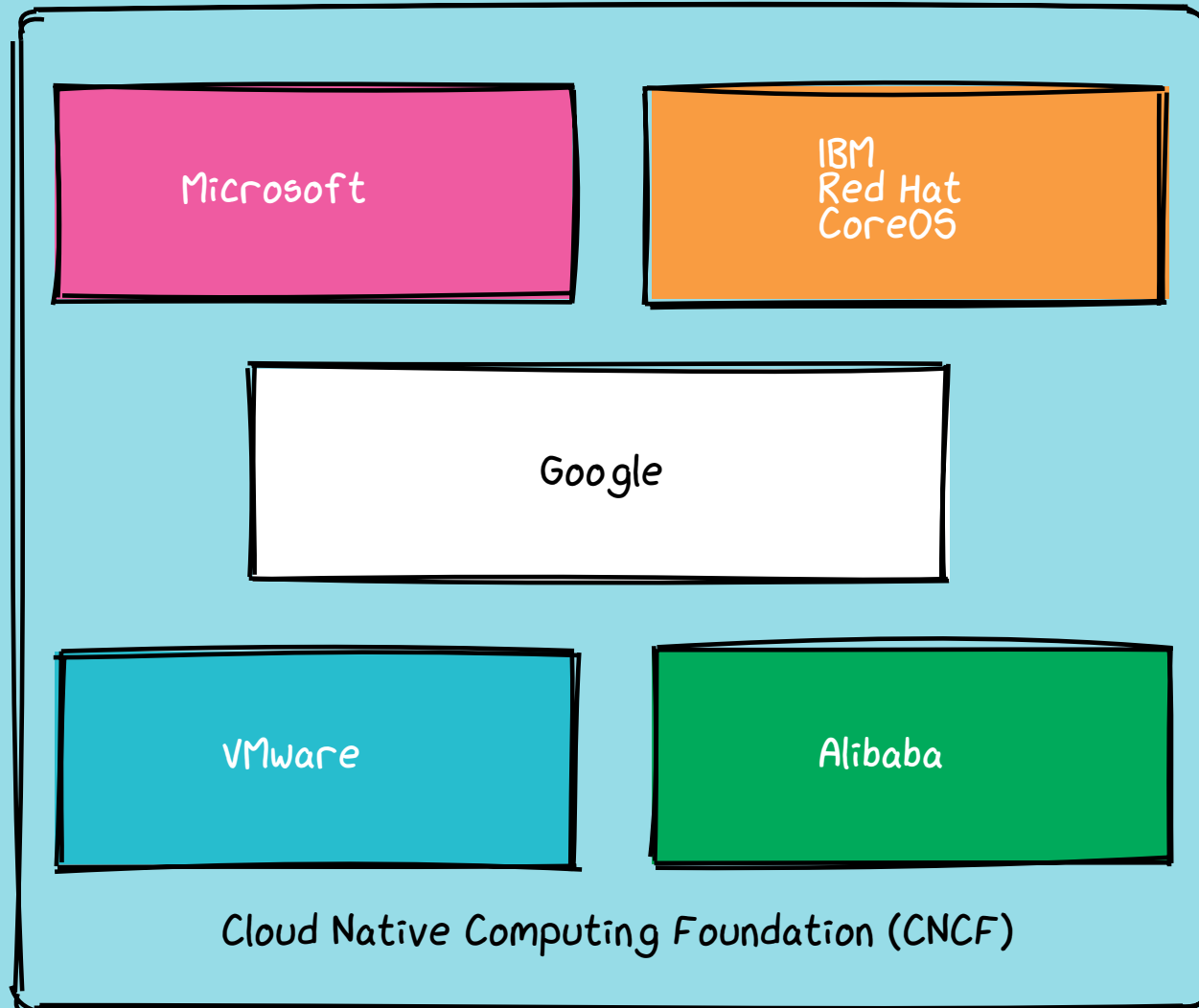
Alexa for Business, Amazon AppFlow, Amazon Augmented AI, Amazon Braket, Amazon Chime, Amazon CodeGuru, Amazon Comprehend, Amazon Connect, Amazon DocumentDB, Amazon EventBridge, Amazon Forecast, Amazon Fraud Detector, Amazon GameLift, Amazon Honeycode, Amazon Interactive Video Service, Amazon Kendra, Amazon Keyspaces, Amazon Lex, Amazon Macie, Amazon Managed Blockchain, Amazon MQ, Amazon Personalize, Amazon Polly, Amazon QLDB, Amazon Redshift, Amazon Rekognition, Amazon SageMaker, Amazon Sumerian, Amazon Textract, Amazon Transcribe, Amazon Translate, API Gateway, Application Discovery Service, AppStream 2.0, Artifact, Athena, AWS Amplify, AWS App Mesh, AWS AppConfig, AWS AppSync, AWS Auto Scaling, AWS Backup, AWS Budgets, AWS Chatbot, AWS Cloud Map, AWS Compute Optimizer, AWS Cost Explorer, AWS Data Exchange, AWS DeepComposer, AWS DeepLens, AWS DeepRacer, AWS Firewall Manager, AWS Glue, AWS IQ, AWS Lake Formation, AWS License Manager, AWS Marketplace Subscriptions, AWS Migration Hub, AWS Organizations, AWS Outposts, AWS RoboMaker, AWS Single Sign-On, AWS Snow Family, AWS Transfer Family, AWS Well-Architected Tool, Batch, Certificate Manager, Cloud9, CloudFormation, CloudFront, CloudHSM, CloudSearch, CloudTrail, CloudWatch, CodeArtifact, CodeBuild, CodeCommit, CodeDeploy, CodePipeline, CodeStar, Cognito, Config, Control Tower, Data Pipeline, Database Migration Service, DataSync, Detective, Device Farm, Direct Connect, Directory Service, DynamoDB, EC2, EC2 Image Builder, EFS, Elastic Beanstalk, Elastic Container Registry, Elastic Container Service, Elastic Kubernetes Service, Elastic Transcoder, ElastiCache, Elasticsearch Service, Elemental Appliances & Software, EMR, FreeRTOS, FSx, Global Accelerator, Ground Station, GuardDuty, IAM, Inspector, IoT 1-Click, IoT Analytics, IoT Core, IoT Device Defender, IoT Device Management, IoT Events, IoT Greengrass, IoT SiteWise, IoT Things Graph, Key Management Service, Kinesis, Kinesis Video Streams, Lambda, Launch Wizard, Lightsail, Managed Services, MediaConnect, MediaConvert, MediaLive, MediaPackage, MediaStore, MediaTailor, Mobile Hub, MSK, Neptune, OpsWorks, Personal Health Dashboard, Pinpoint, QuickSight, RDS, Resource Access Manager, Route 53, S3, S3 Glacier, Secrets Manager, Security Hub, Server Migration Service, Serverless Application Repository, Service Catalog, Simple Email Service, Simple Notification Service, Simple Queue Service, Step Functions, Storage Gateway, Support, SWF, Systems Manager, Trusted Advisor, VPC, WAF & Shield, WorkDocs, WorkLink, WorkMail, WorkSpaces, X-Ray

List of AWS services (July 2020).

# THE HORCRUX PATTERN



# VENDOR SHARDING



# PRECONDITIONS

open source

neutral IP ownership

extensibility

# PRECONDITIONS

open source – MIT

neutral IP ownership

extensibility

A suitably permissive license is a necessary but not sufficient precondition.

# PRECONDITIONS

open source – MIT

neutral IP ownership – CNCF

extensibility

K8s would *\*not\** be what it is today without neutral IP ownership... K8s has spawned an entire ecosystem *\*because\** it can be used by consuming projects/products without fear.

– Matt Klein

Source: [@mattklein123](#) on Twitter, 17 February 2020.

# PRECONDITIONS

open source – MIT

neutral IP ownership – CNCF

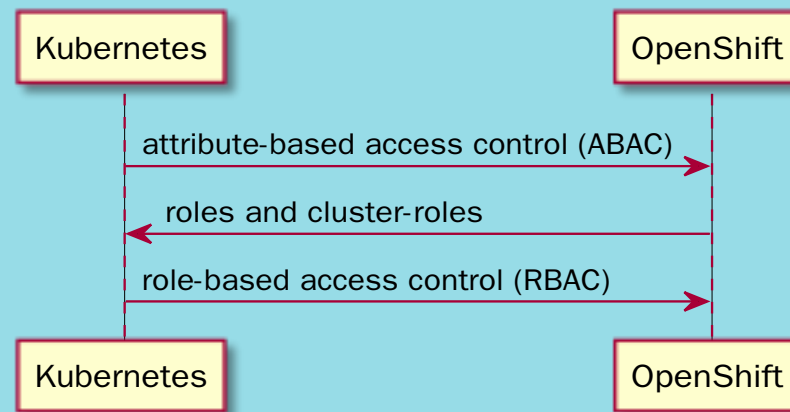
extensibility – controllers and operators

**Controllers** add custom processing to the core reconciliation loop.

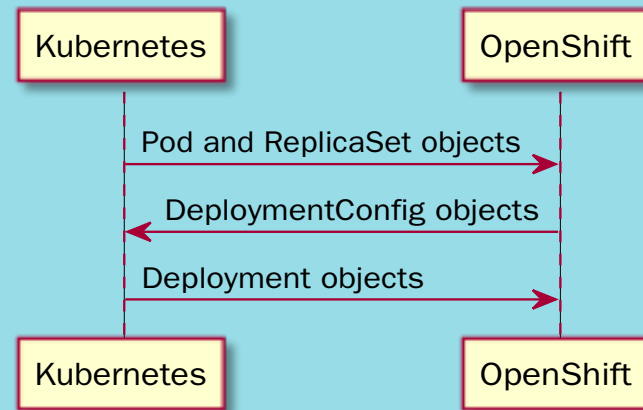
When paired with custom resource definitions, they are known as **operators**.

# PIZZA EFFECTS

# IDENTITY

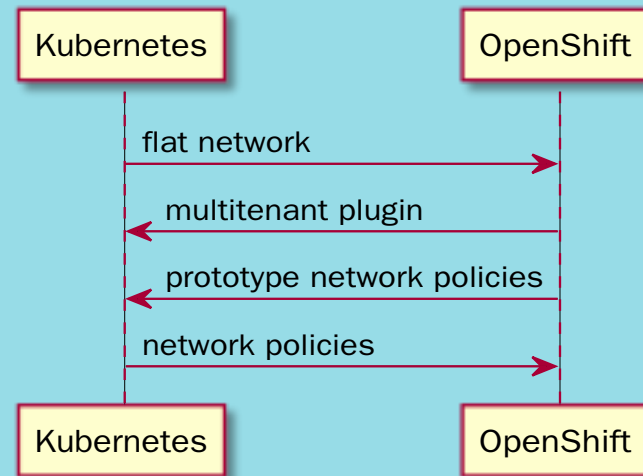


# DEPLOYMENTS

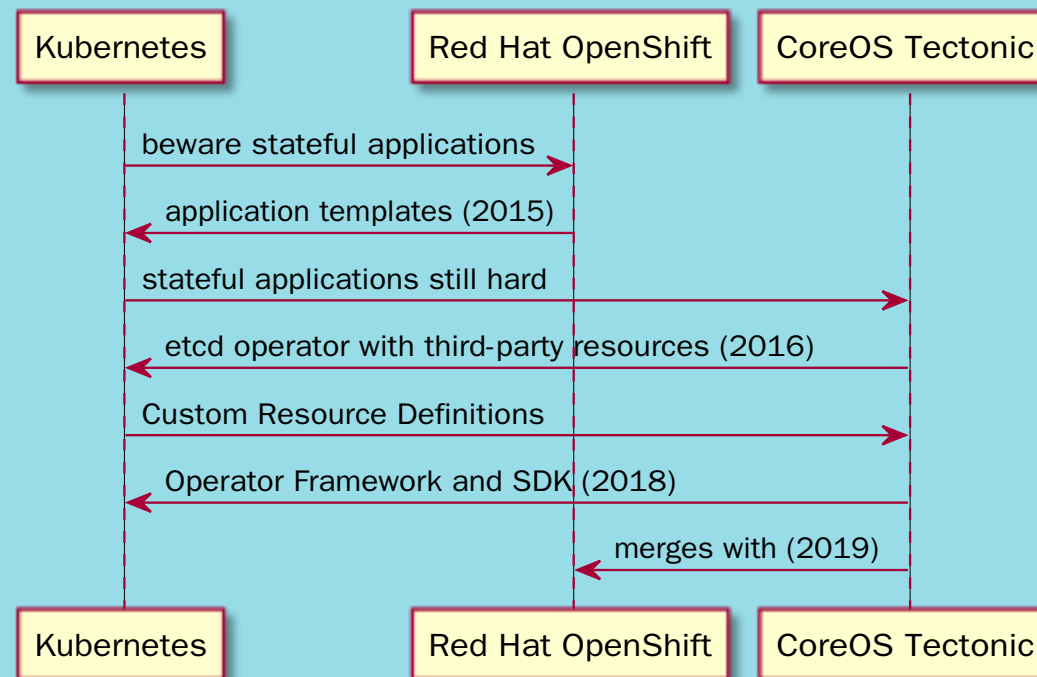




# NETWORKING

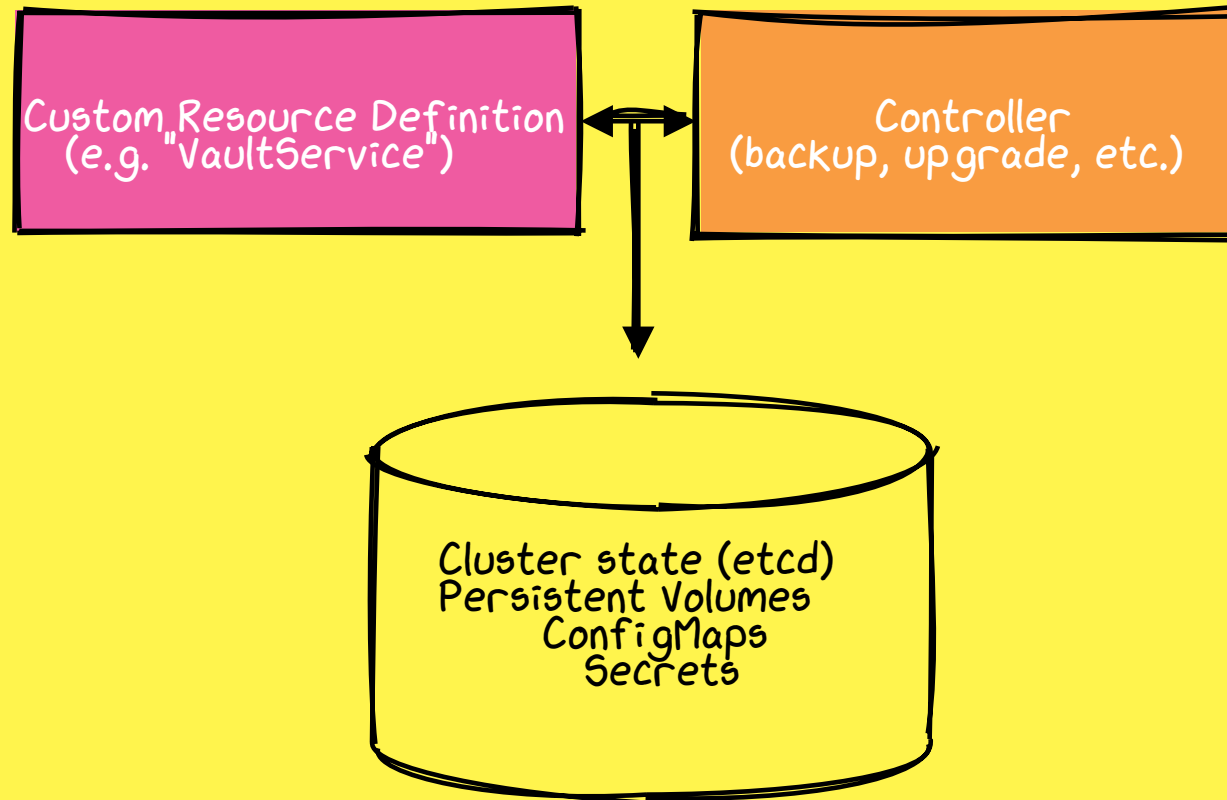


# STATE



# THE OPERATOR LIFE

# OPERATORS



# STATEFUL WORKLOADS

Stateless is Easy, Stateful is Hard.

– Brandon Philips (2016)

Source: [coreos.com/blog/introducing-operators.html](https://coreos.com/blog/introducing-operators.html)

# CORPORATE SPONSORS

Vault operator



MySQL operator

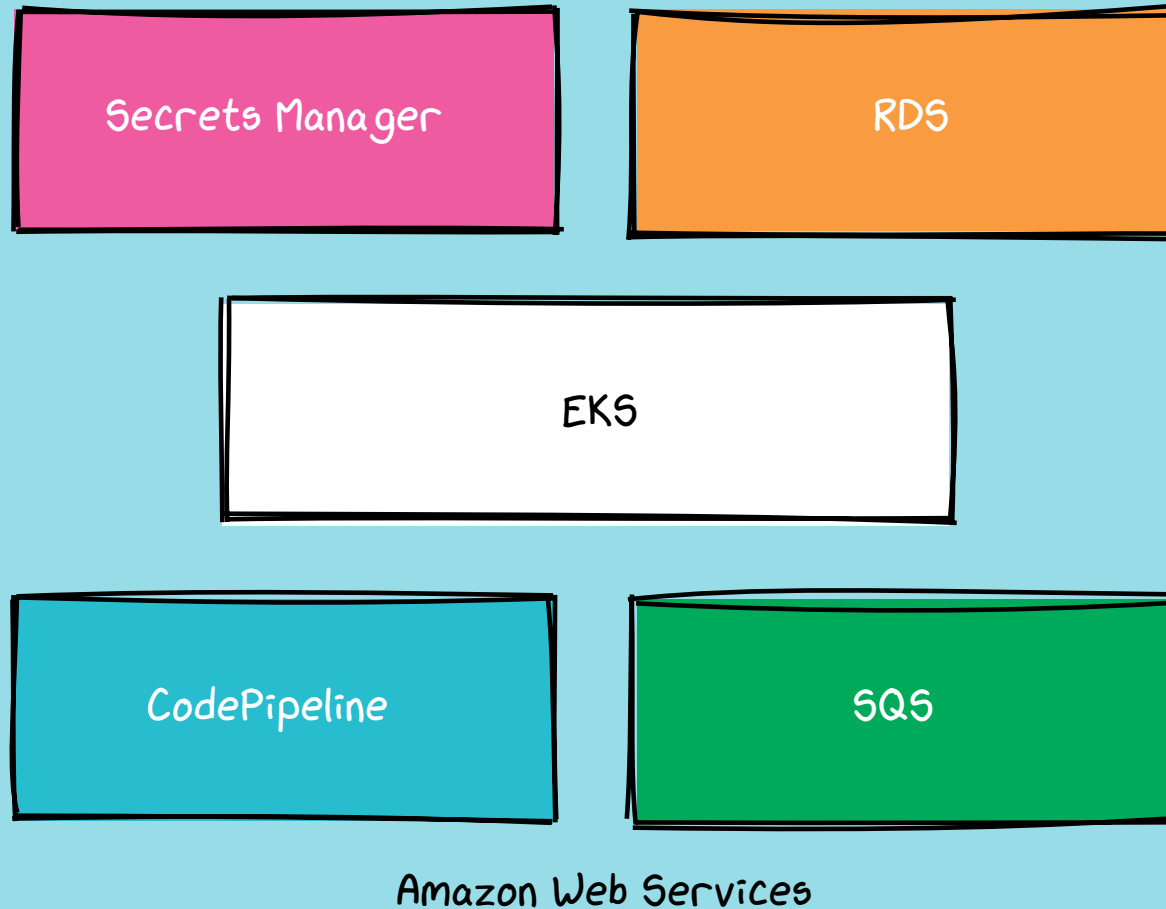


PostgreSQL operator



# SOUL-SEARCHING AT THE BAZAAR

# A VERY PUBLIC BREAKUP

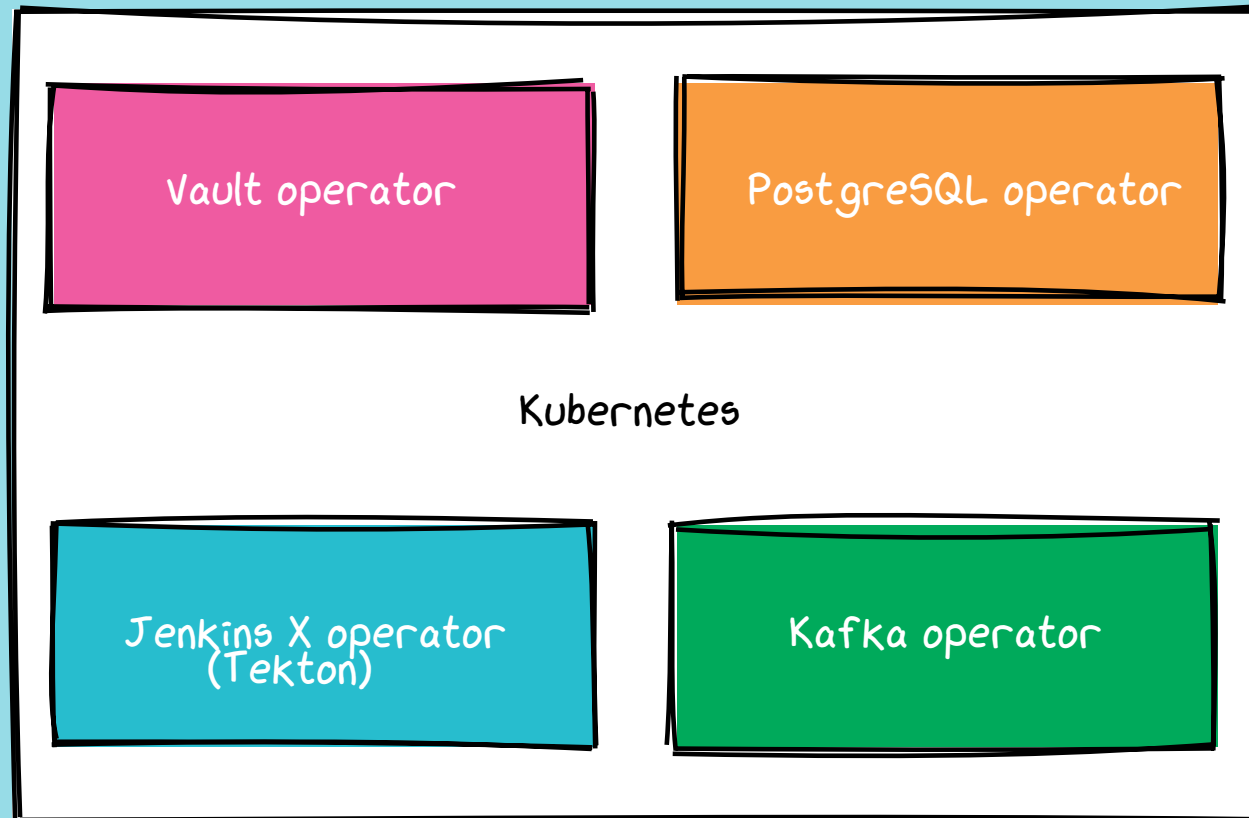


AWS perfected the use of services based on open source products.

In 2016 MongoDB responded with the [Server Side Public License](#).



# A PORTABLE STACK



Any cloud offering a managed Kubernetes service

# REMEMBER THESE?

Alexa for Business, Amazon AppFlow, Amazon Augmented AI, Amazon Braket, Amazon Chime, Amazon CodeGuru, Amazon Comprehend, Amazon Connect, Amazon DocumentDB, Amazon EventBridge, Amazon Forecast, Amazon Fraud Detector, Amazon GameLift, Amazon Honeycode, Amazon Interactive Video Service, Amazon Kendra, Amazon Keyspaces, Amazon Lex, Amazon Macie, Amazon Managed Blockchain, Amazon MQ, Amazon Personalize, Amazon Polly, Amazon QLDB, Amazon Redshift, Amazon Rekognition, Amazon SageMaker, Amazon Sumerian, Amazon Textract, Amazon Transcribe, Amazon Translate, API Gateway, Application Discovery Service, AppStream 2.0, Artifact, Athena, AWS Amplify, AWS App Mesh, AWS AppConfig, AWS AppSync, AWS Auto Scaling, AWS Backup, AWS Budgets, AWS Chatbot, AWS Cloud Map, AWS Compute Optimizer, AWS Cost Explorer, AWS Data Exchange, AWS DeepComposer, AWS DeepLens, AWS DeepRacer, AWS Firewall Manager, AWS Glue, AWS IQ, AWS Lake Formation, AWS License Manager, AWS Marketplace Subscriptions, AWS Migration Hub, AWS Organizations, AWS Outposts, AWS RoboMaker, AWS Single Sign-On, AWS Snow Family, AWS Transfer Family, AWS Well-Architected Tool, Batch, Certificate Manager, Cloud9, CloudFormation, CloudFront, CloudHSM, CloudSearch, CloudTrail, CloudWatch, CodeArtifact, CodeBuild, CodeCommit, CodeDeploy, CodePipeline, CodeStar, Cognito, Config, Control Tower, Data Pipeline, Database Migration Service, DataSync, Detective, Device Farm, Direct Connect, Directory Service, DynamoDB, EC2, EC2 Image Builder, EFS, Elastic Beanstalk, Elastic Container Registry, Elastic Container Service, Elastic Kubernetes Service, Elastic Transcoder, ElastiCache, Elasticsearch Service, Elemental Appliances & Software, EMR, FreeRTOS, FSX, Global Accelerator, Ground Station, GuardDuty, IAM, Inspector, IoT 1-Click, IoT Analytics, IoT Core, IoT Device Defender, IoT Device Management, IoT Events, IoT Greengrass, IoT SiteWise, IoT Things Graph, Key Management Service, Kinesis, Kinesis Video Streams, Lambda, Launch Wizard, Lightsail, Managed Services, MediaConnect, MediaConvert, MediaLive, MediaPackage, MediaStore, MediaTailor, Mobile Hub, MSK, Neptune, OpsWorks, Personal Health Dashboard, Pinpoint, QuickSight, RDS, Resource Access Manager, Route 53, S3, S3 Glacier, Secrets Manager, Security Hub, Server Migration Service, Serverless Application Repository, Service Catalog, Simple Email Service, Simple Notification Service, Simple Queue Service, Step Functions, Storage Gateway, Support, SWF, Systems Manager, Trusted Advisor, VPC, WAF & Shield, WorkDocs, WorkLink, WorkMail, WorkSpaces, X-Ray

Imagine using managed open source products with first-party support instead.

On AWS or any other cloud.

# CALLING ALL ASPIRING CLOUD VENDORS

IS THE OPERATOR LIFE FOR ME?

Did AWS steal a multi-year march on you?

Are you at risk of US trade sanctions?

Are you a bazaar kind of company?

YES!	NOPE
✓	X
✓	?
✓	?

# THANK YOU

Slides built with Markdeck

GitHub [gerald1248/kubernetes-open-source-slides](https://github.com/gerald1248/kubernetes-open-source-slides)

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