:iTechArt

Software
Engineering
Services

JAN, 2021

# Deployment:
# Fast, Fine, Elastic

Alex Burym

# Hi there.
# I’m Alex Burym

- 10+ years of diverse experience in IT
- CI/CD
- DevOps
- Cloud Computing
- Networking
- Process Automation

## Contact Information:

Email: alex.burym@itechart-group.com
Skype: live:eng.zubr

# Plan



- What about this K8s, anyhow?
- ECS vs K8s
- AWS EKS!
- Let’s rock!

# Flashback..

**Infrastructure as Code или Terraform-им AWS для типичного web-приложения**

# Flashback..



WebSyndicate

Community of Web Developers
(January meetup #5, 2019)

:iTechArt

Software
Engineering
Services

Jan 26, 2019

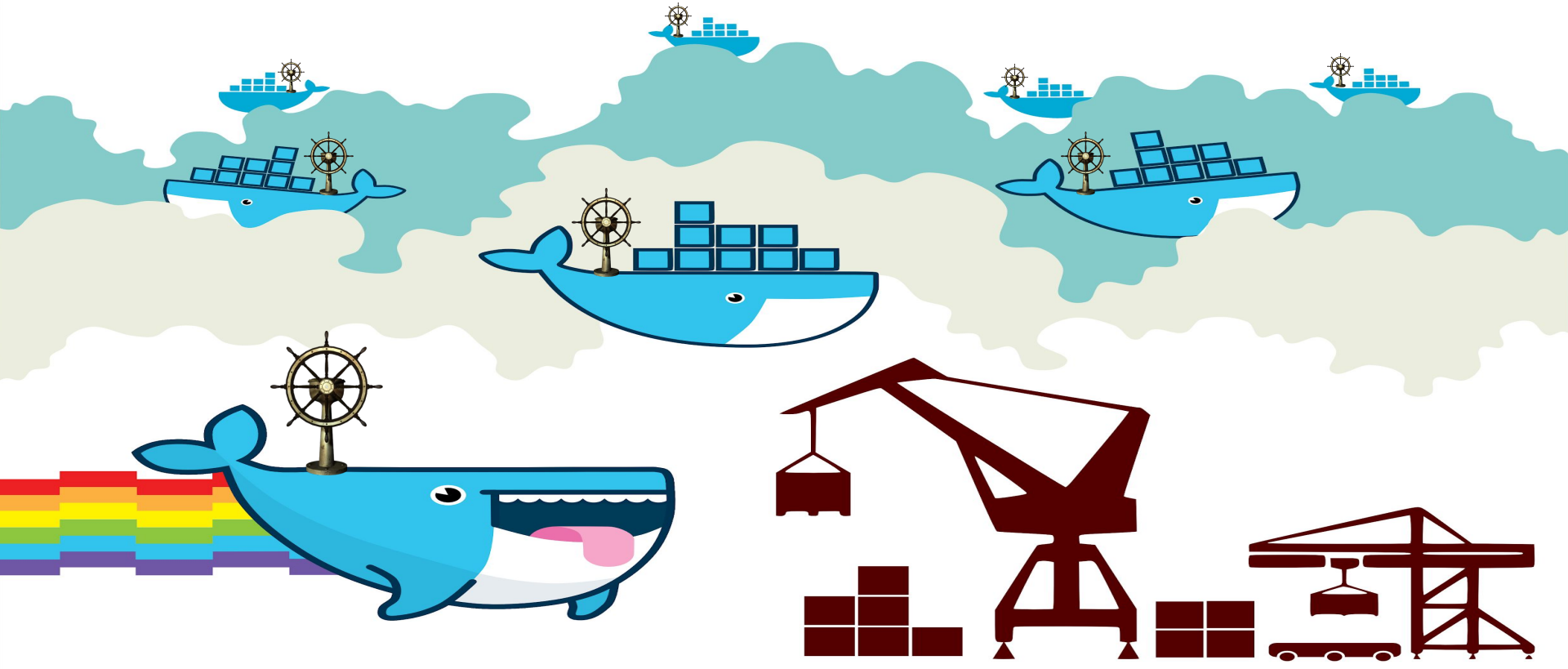
Deployment:
Fast, Fine, Affordable

Alex Burym

Алексей Бурим
*iTechArt, DevOps Engineer*

# What about this K8s, anyhow?

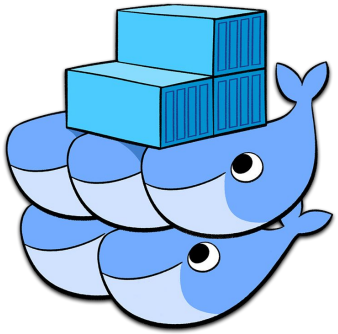




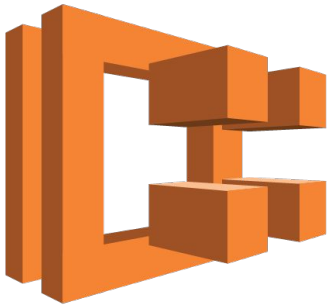
# What about this K8S, anyhow?



**CONTAINERS ORCHESTRATION EVOLUTION**



docker swarm



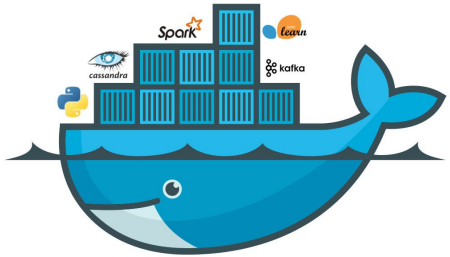
AWS ECS

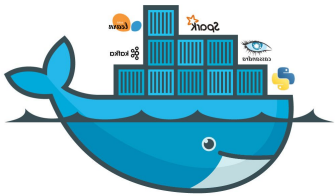
Amazon EKS

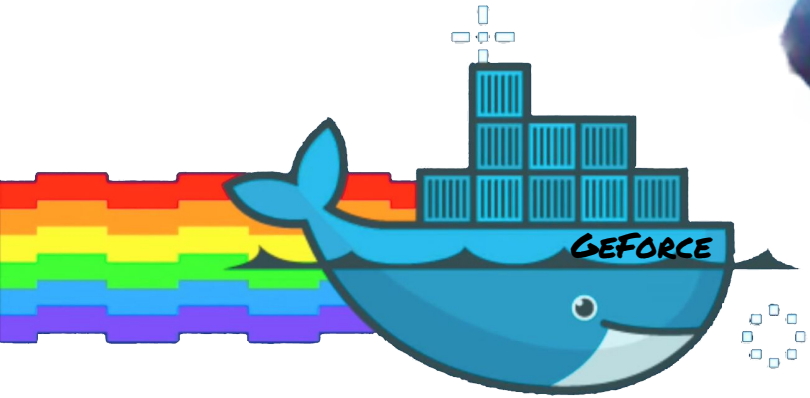
# What about this K8S, anyhow?

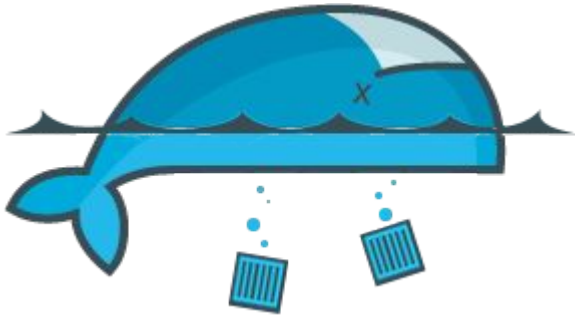
# What about this K8S, anyhow?







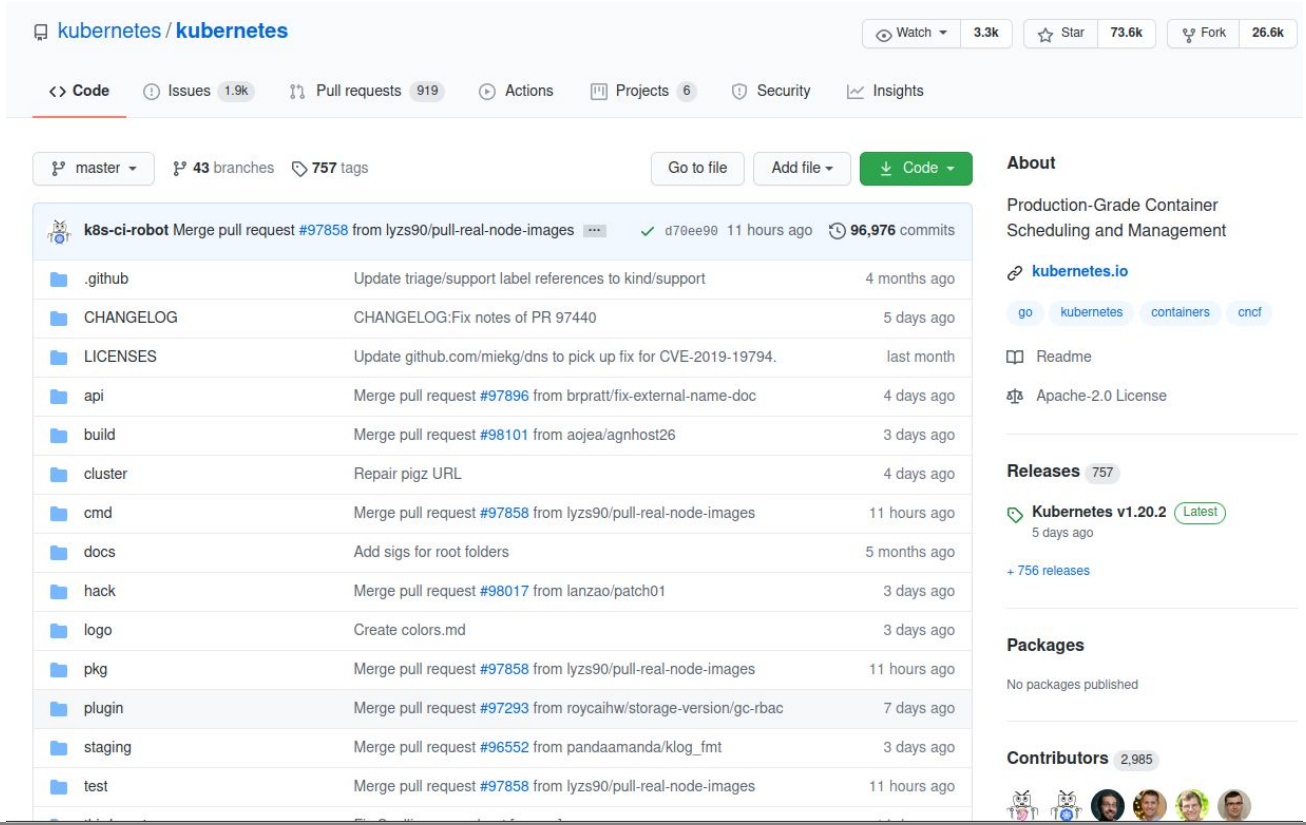
# What about this K8S, anyhow?



- Initial release:7 June 2014
- Repository:https://github.com/kubernetes/kubernetes
- Written in:Go
- License:Apache License 2.0
- Website:https://kubernetes.io
- Hosted by:Cloud Native Computing Foundation(CNCF)

# What about this K8S, anyhow?





kubernetes / kubernetes

Watch 3.3k | Star 73.6k | Fork 26.6k

Code | Issues 1.9k | Pull requests 919 | Actions | Projects 6 | Security | Insights

master | 43 branches | 757 tags | Go to file | Add file | Code

k8s-ci-robot Merge pull request #97858 from lyzs90/pull-real-node-images ··· d70ee90 11 hours ago 96,976 commits

| | | |
|---|---|---|
| .github | Update triage/support label references to kind/support | 4 months ago |
| CHANGELOG | CHANGELOG:Fix notes of PR 97440 | 5 days ago |
| LICENSES | Update github.com/miekg/dns to pick up fix for CVE-2019-19794. | last month |
| api | Merge pull request #97896 from brpratt/fix-external-name-doc | 4 days ago |
| build | Merge pull request #98101 from aojea/agnhost26 | 3 days ago |
| cluster | Repair pigz URL | 4 days ago |
| cmd | Merge pull request #97858 from lyzs90/pull-real-node-images | 11 hours ago |
| docs | Add sigs for root folders | 5 months ago |
| hack | Merge pull request #98017 from lanzao/patch01 | 3 days ago |
| logo | Create colors.md | 3 days ago |
| pkg | Merge pull request #97858 from lyzs90/pull-real-node-images | 11 hours ago |
| plugin | Merge pull request #97293 from roycaihw/storage-version/gc-rbac | 7 days ago |
| staging | Merge pull request #96552 from pandaamanda/klog_fmt | 3 days ago |
| test | Merge pull request #97858 from lyzs90/pull-real-node-images | 11 hours ago |

About

Production-Grade Container Scheduling and Management

kubernetes.io

go | kubernetes | containers | cncf

Readme

Apache-2.0 License

Releases 757

Kubernetes v1.20.2 Latest

5 days ago

+ 756 releases

Packages

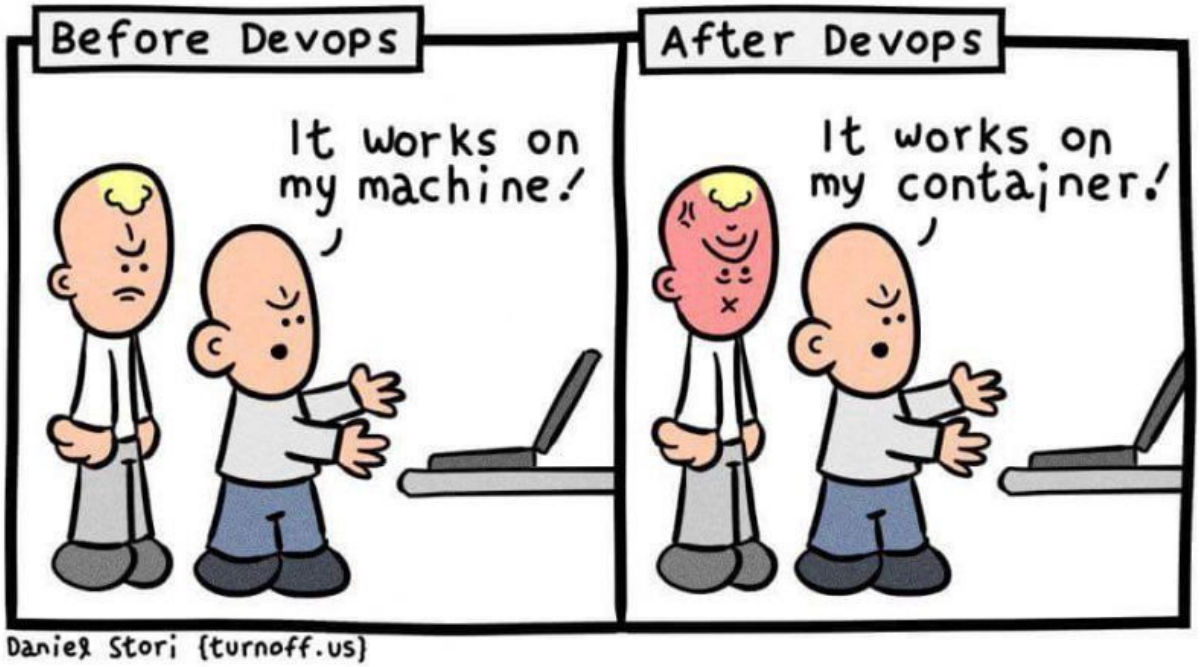
No packages published

Contributors 2,985

# What about this K8S, anyhow?

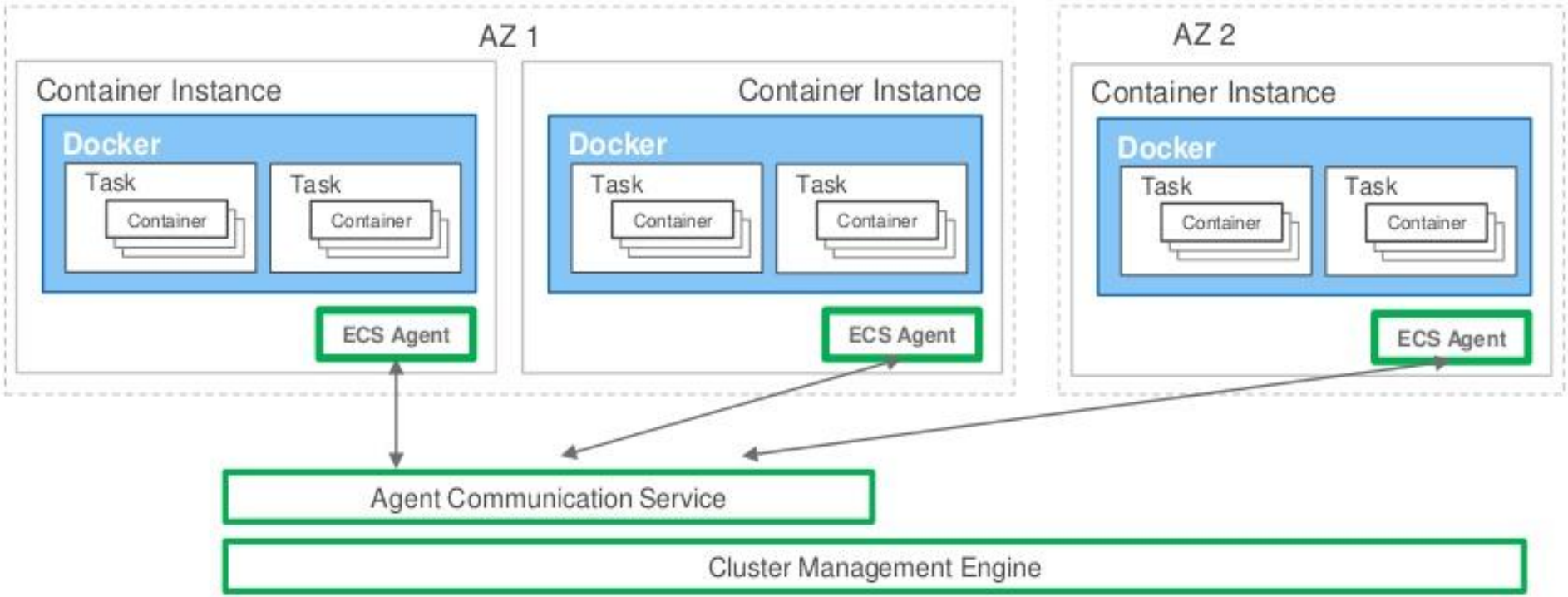
# What about this K8S, anyhow?

It works on my machine...



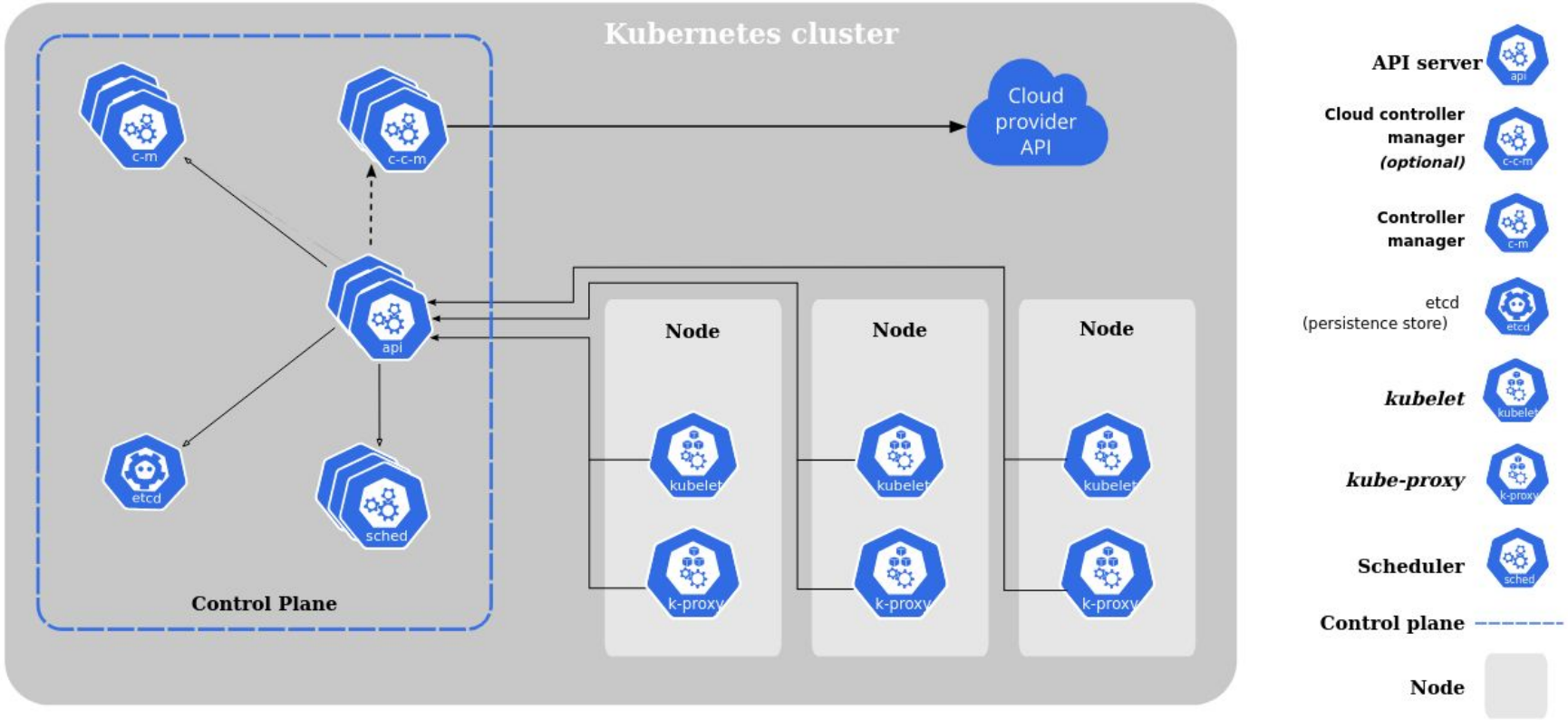
# ECS vs K8s




AZ 1
AZ 2
Container Instance
Container Instance
Container Instance
Docker
Task
Container
Task
Container
Docker
Task
Container
Task
Container
Docker
Task
Container
Task
Container
ECS Agent
ECS Agent
ECS Agent
Agent Communication Service
Cluster Management Engine

# ECS vs K8s




Kubernetes cluster
Cloud provider API
c-m
c-c-m
api
etcd
sched
Control Plane
Node
Node
Node
kubelet
k-proxy
API server
Cloud controller manager (optional)
Controller manager
etcd (persistence store)
kubelet
kube-proxy
Scheduler
Control plane
Node

# ECS vs K8s



ECS:

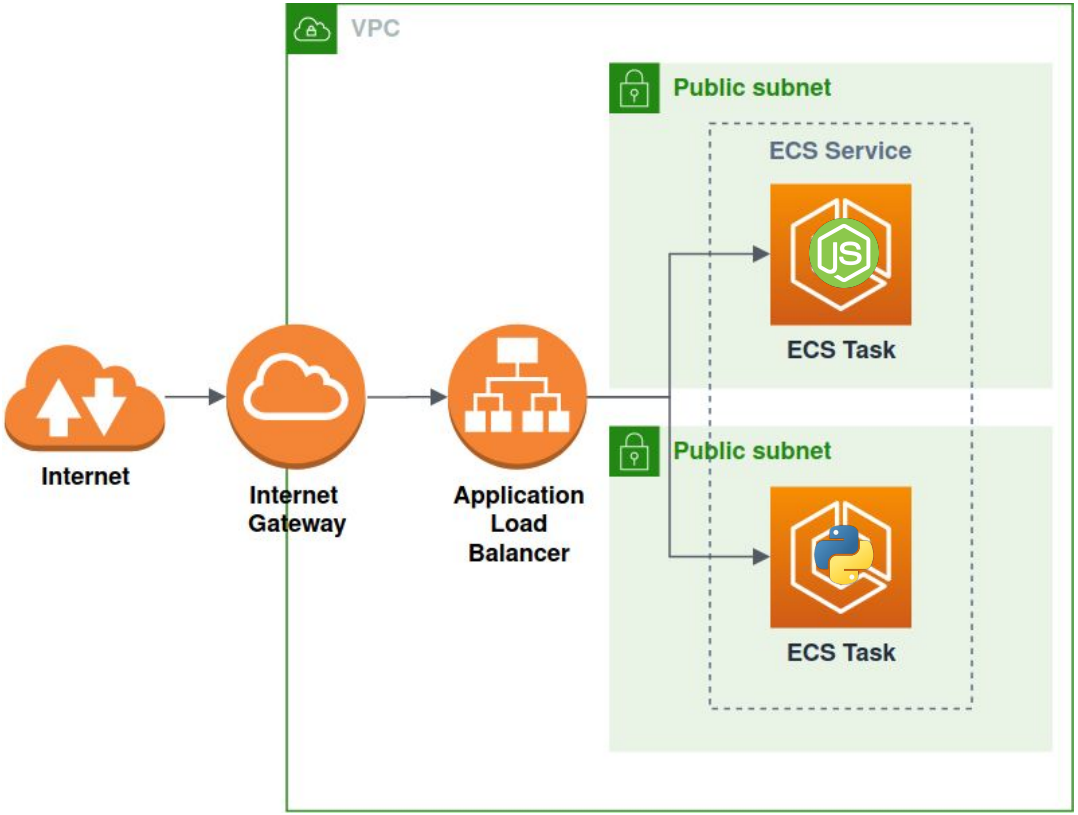
- Task Definition
- Service

K8s:

- Pod
- Replica Set
- Deployment
- Service

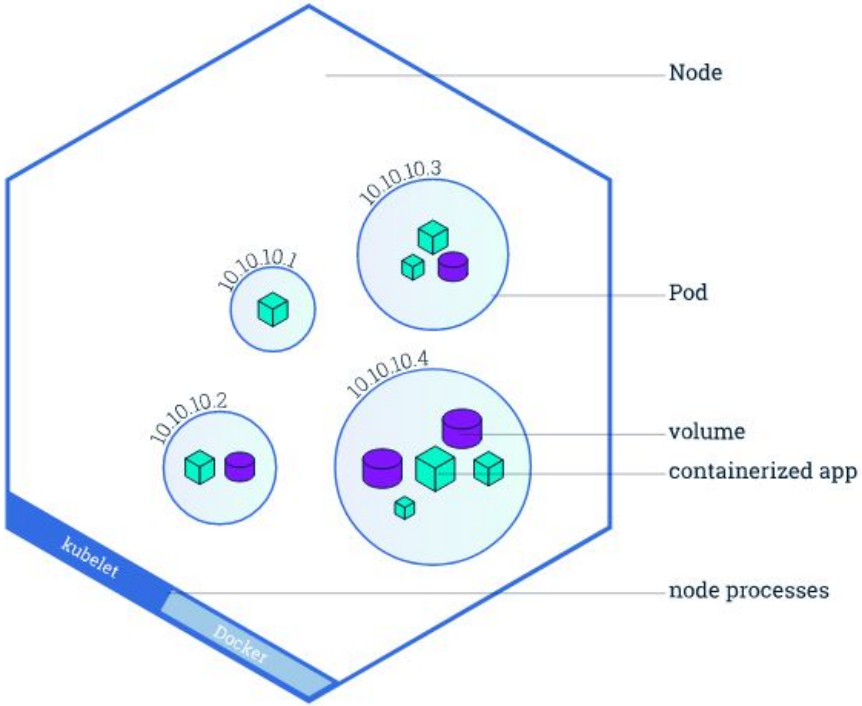
# ECS vs K8s




VPC
Public subnet
ECS Service
ECS Task
Public subnet
ECS Task
Internet
Internet Gateway
Application Load Balancer

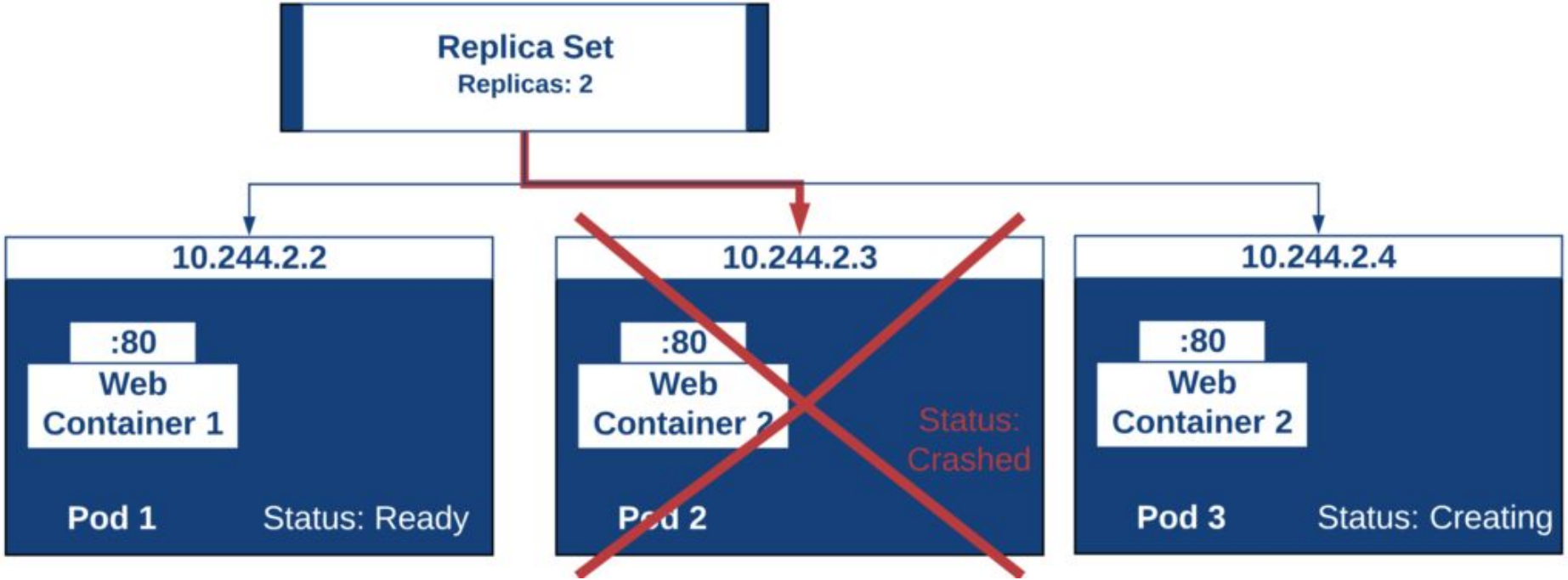
# ECS vs K8s




Node
10.10.10.3
10.10.10.1
Pod
10.10.10.4
10.10.10.2
volume
containerized app
kubelet
Docker
node processes

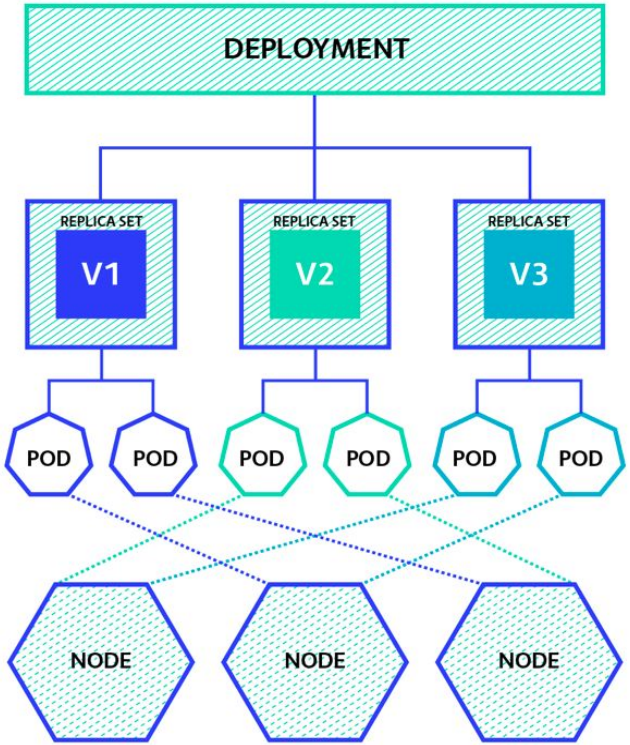
# ECS vs K8s




Replica Set
Replicas: 2
10.244.2.2
:80
Web
Container 1
Pod 1
Status: Ready
10.244.2.3
:80
Web
Container 2
Status:
Crashed
Pod 2
10.244.2.4
:80
Web
Container 2
Pod 3
Status: Creating

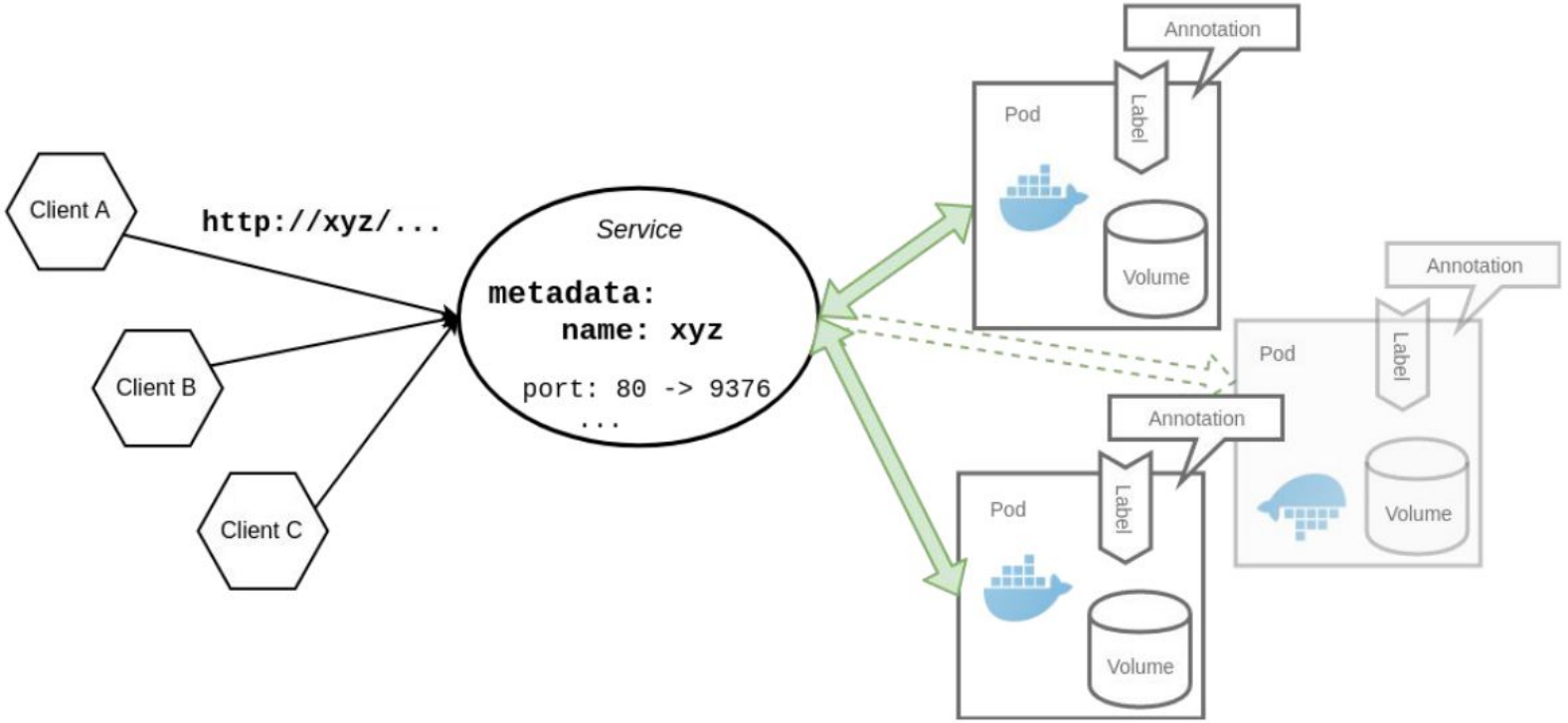
# ECS vs K8s




DEPLOYMENT
REPLICA SET
V1
REPLICA SET
V2
REPLICA SET
V3
POD
POD
POD
POD
POD
POD
NODE
NODE
NODE

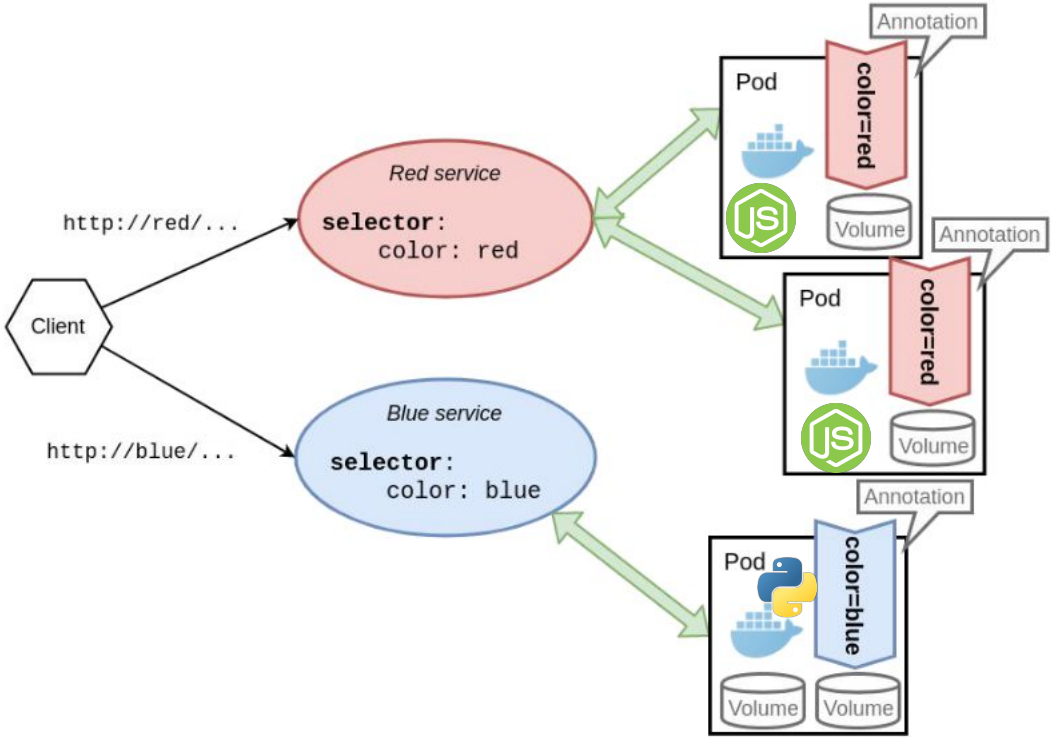
# ECS vs K8s




Client A
Client B
Client C
http://xyz/...
Service
metadata:
name: xyz
port: 80 -> 9376
...
Annotation
Label
Pod
Volume
Annotation
Label
Pod
Volume
Annotation
Label
Pod
Volume

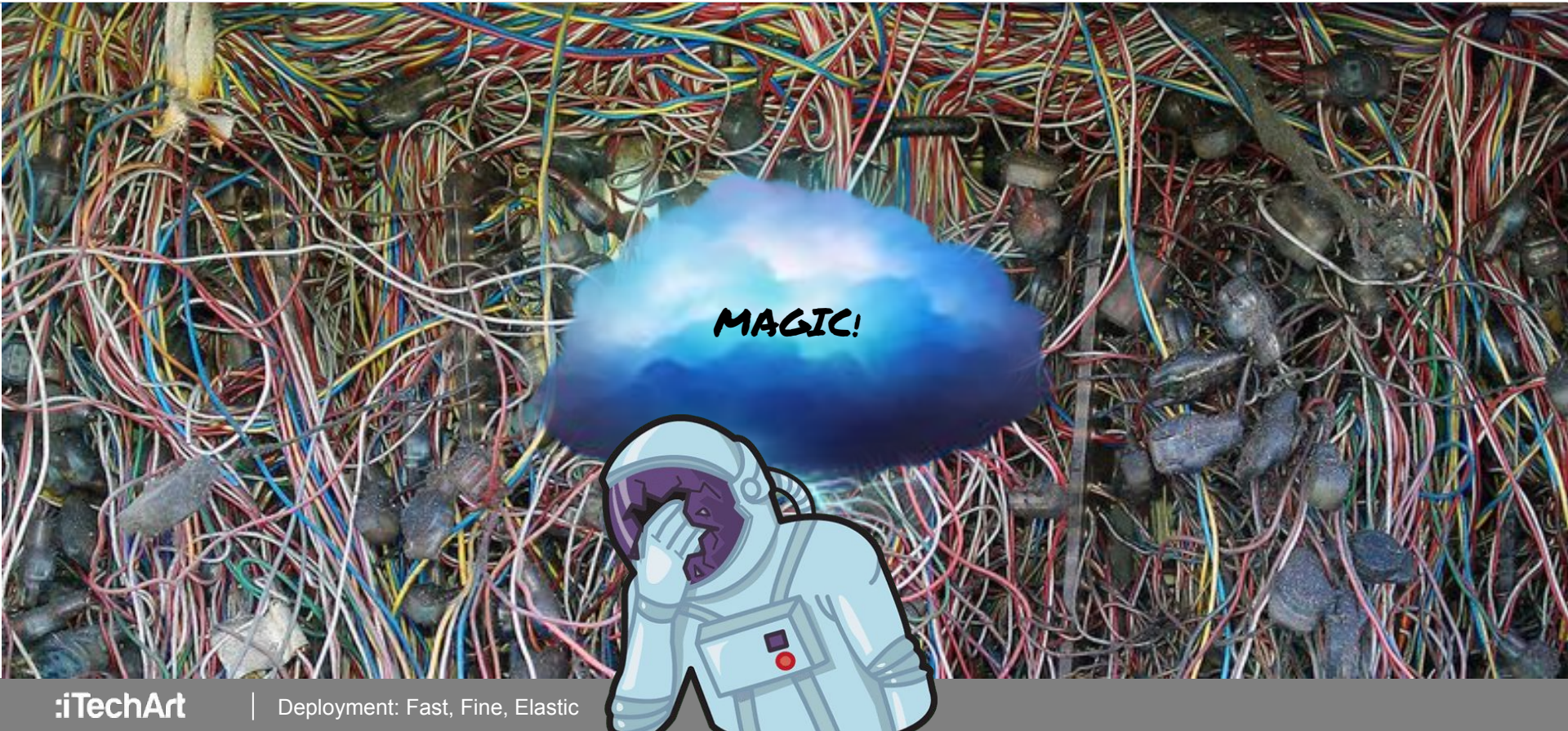
# ECS vs K8s




Annotation
Pod
color=red
Red service
selector:
color: red
http://red/...
Client
Volume
Annotation
Pod
color=red
Volume
Blue service
selector:
color: blue
http://blue/...
Annotation
Pod
color=blue
Volume
Volume

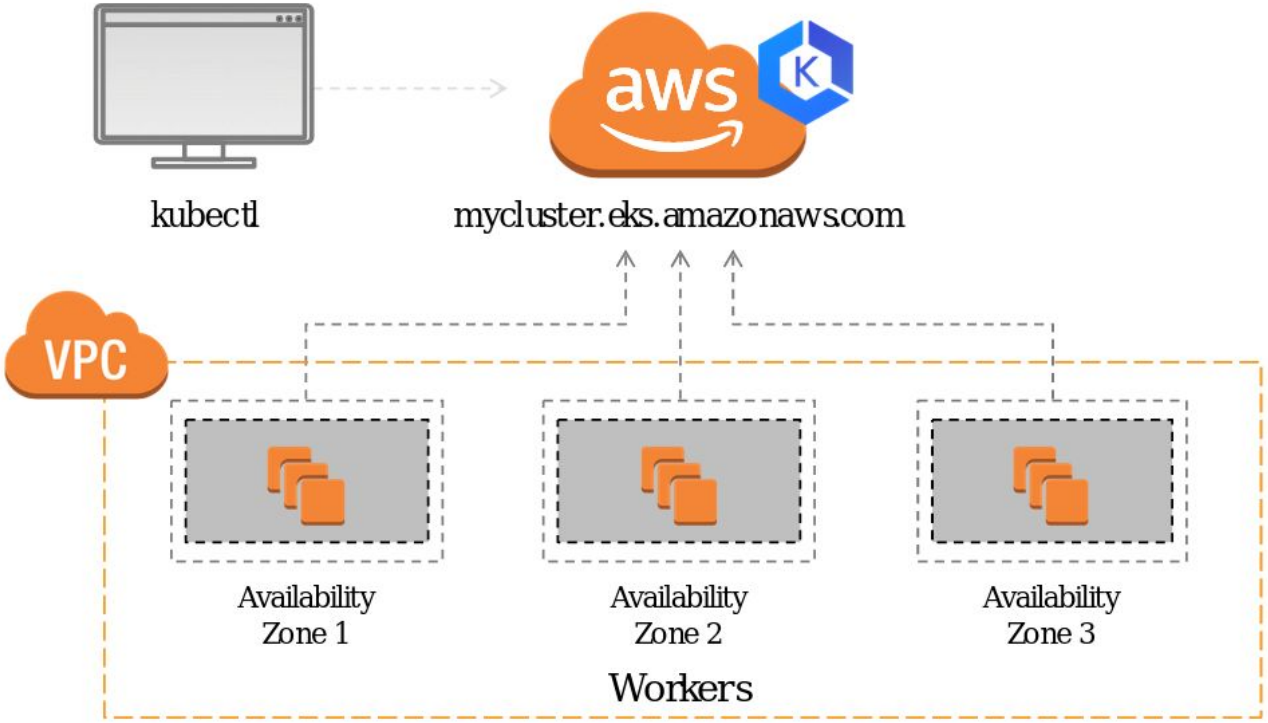
# ECS vs K8s





# AWS EKS!

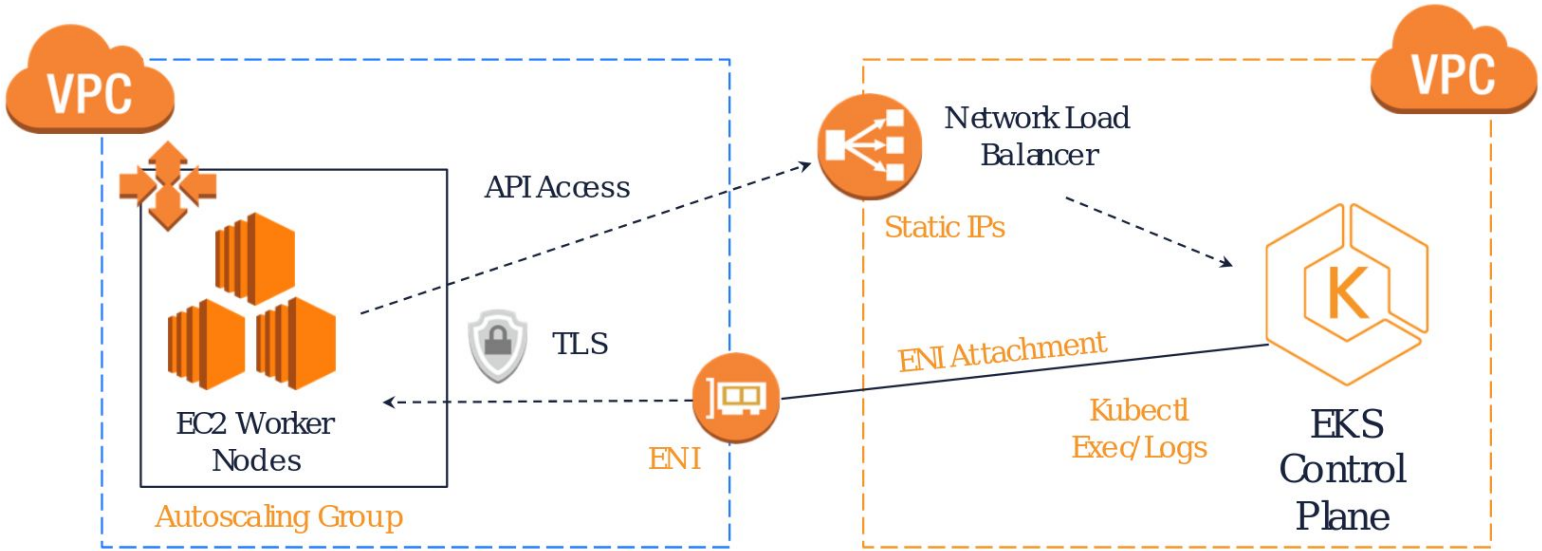



kubectl
aws
mycluster.eks.amazonaws.com
VPC
Availability Zone 1
Availability Zone 2
Availability Zone 3
Workers

# AWS EKS!



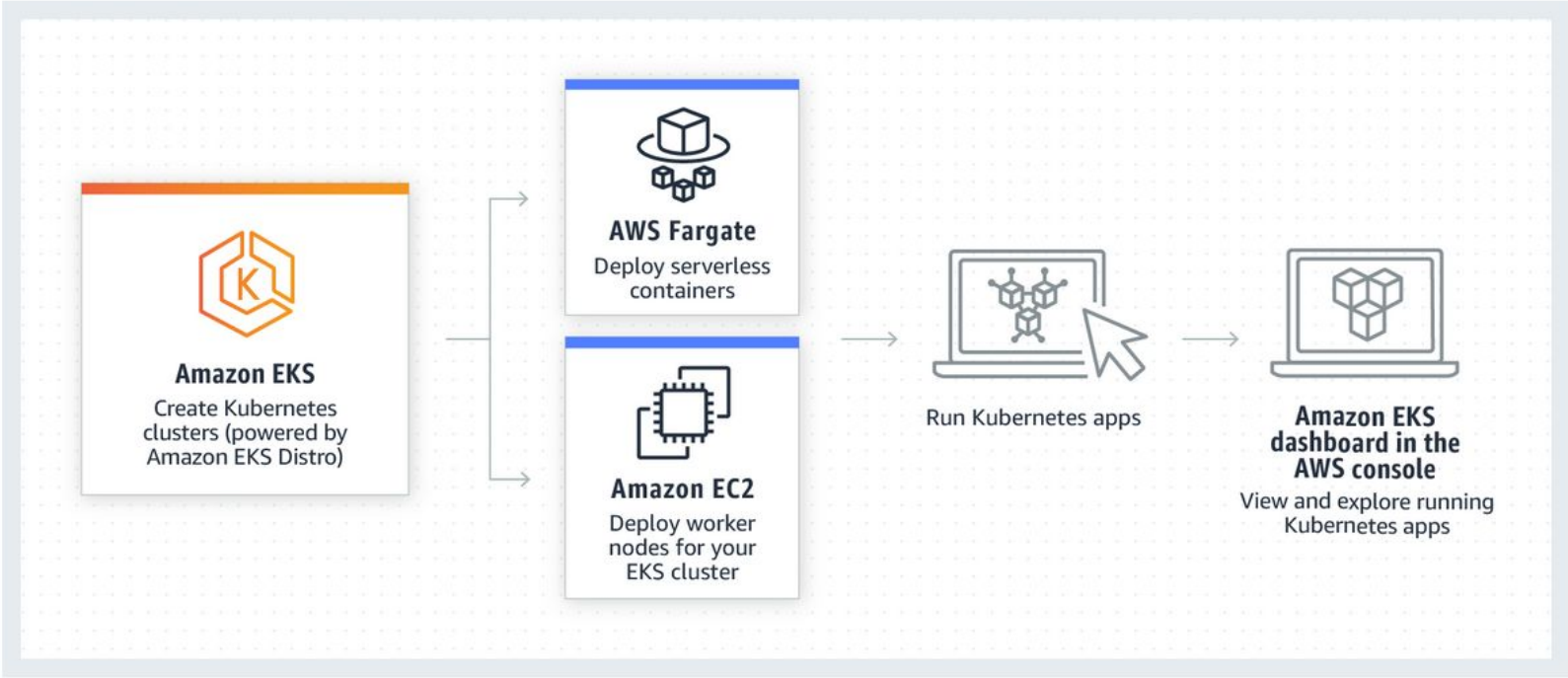
## EKS ARCHITECTURE FOR CONTROL PLANE AND WORKER NODE COMMUNICATION



# AWS EKS!

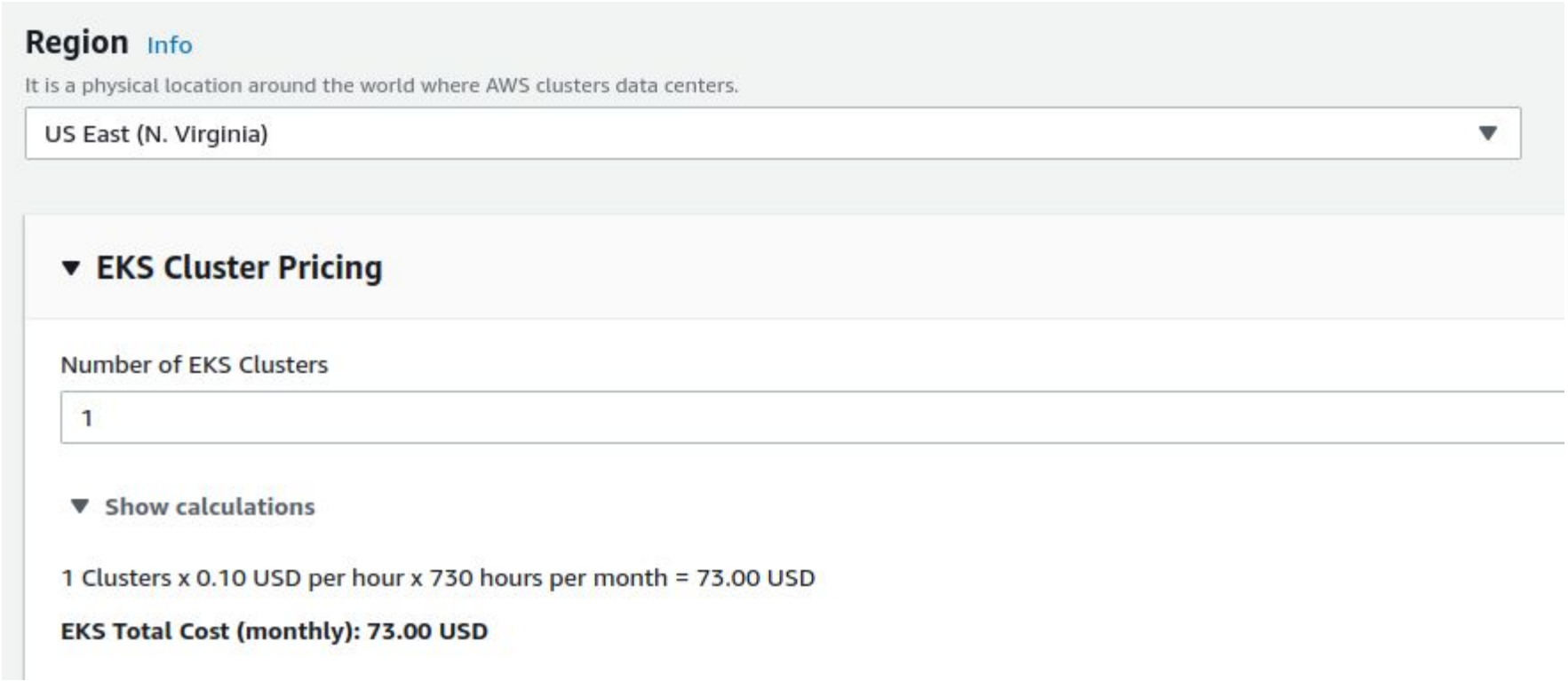


Deploy applications with Amazon EKS in the cloud



# AWS EKS!



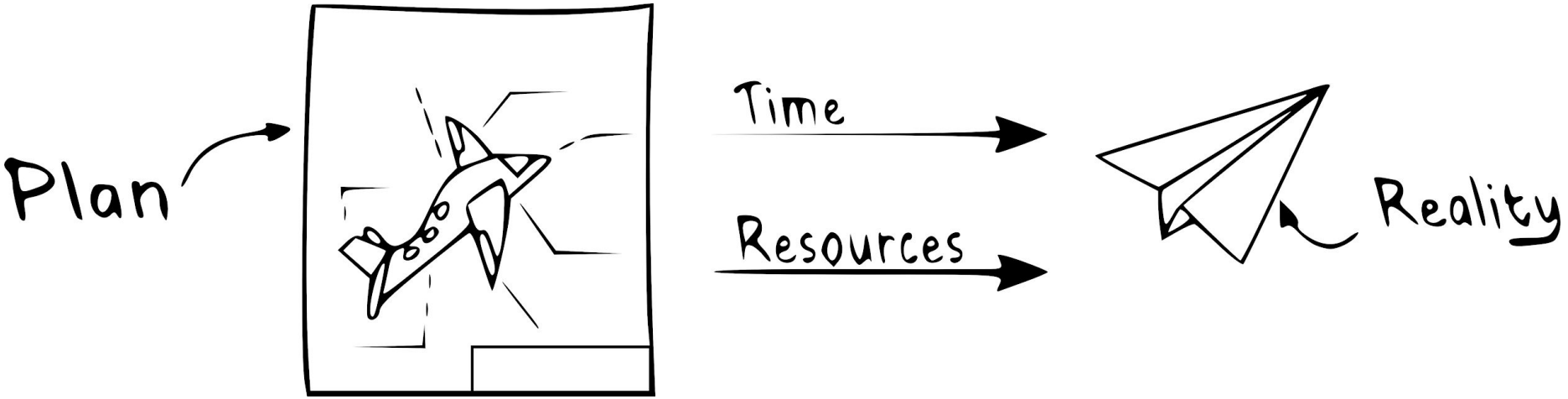

Region Info
It is a physical location around the world where AWS clusters data centers.
US East (N. Virginia)
EKS Cluster Pricing
Number of EKS Clusters
1
Show calculations
1 Clusters x 0.10 USD per hour x 730 hours per month = 73.00 USD
EKS Total Cost (monthly): 73.00 USD

# AWS EKS!

GoDaddy
Pearson
FICO
intuit
verizon
Honeywell
THE POWER OF CONNECTED
logicworks
RetailMeNot
LogMeIn
CONDÉ NAST
mercari
Verisk
EBSCO
Skyscanner
axway
CyberAgent
trainline
Wonderfully Predictable
bynder
PubNub
SCHIBSTED
MEDIA GROUP
YSDT
TROOPS
FireEye
INSIKT
sift science
Numerate
Insider
Time Inc.
FollowAnalytics
WIZELINE
eclectic iq
SafetyCulture
DEV

# AWS EKS!

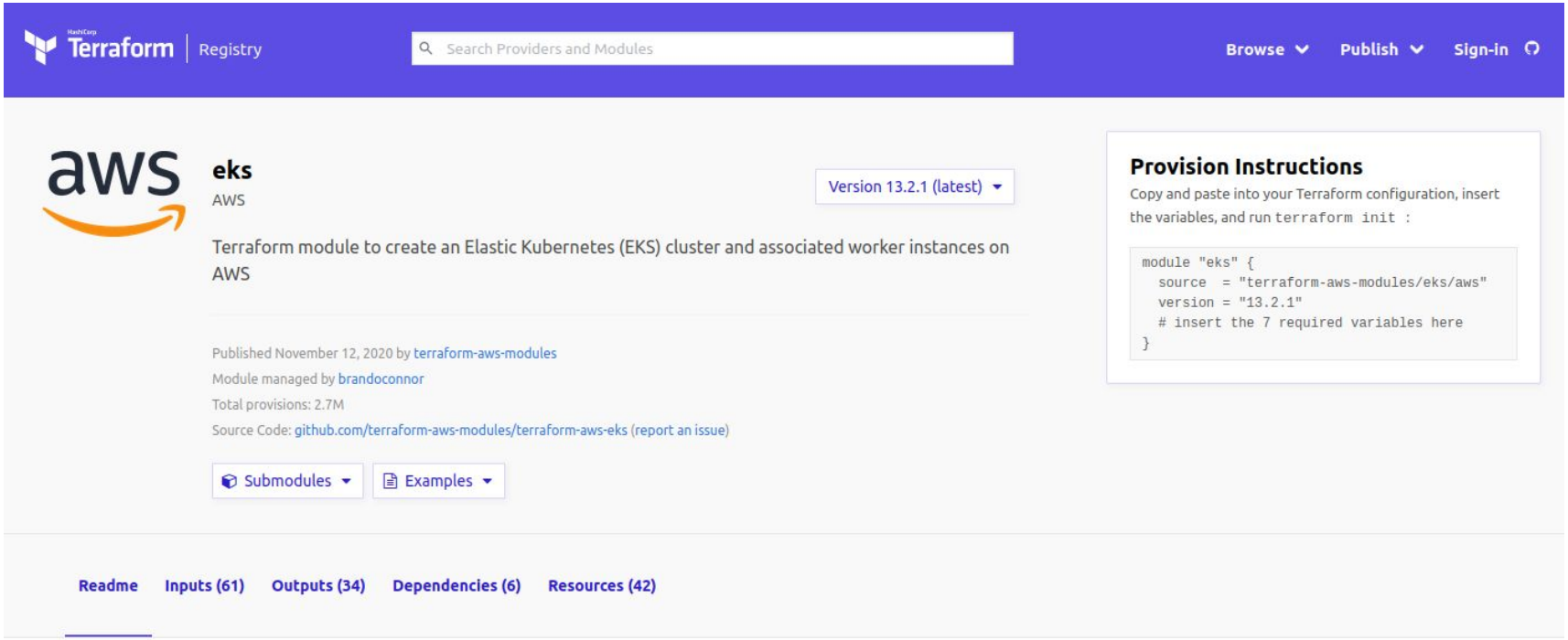




# Let’s rock!

# Let’s rock!



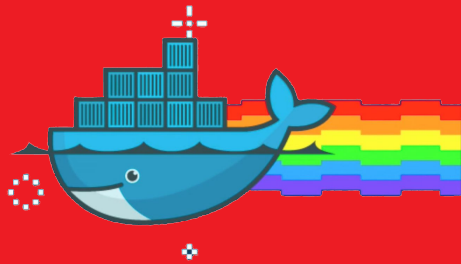

Terraform | Registry
Search Providers and Modules
Browse
Publish
Sign-in
aws
eks
AWS
Version 13.2.1 (latest)
Terraform module to create an Elastic Kubernetes (EKS) cluster and associated worker instances on AWS
Published November 12, 2020 by terraform-aws-modules
Module managed by brandoconnor
Total provisions: 2.7M
Source Code: github.com/terraform-aws-modules/terraform-aws-eks (report an issue)
Submodules
Examples
Provision Instructions
Copy and paste into your Terraform configuration, insert the variables, and run terraform init :
module "eks" {
source = "terraform-aws-modules/eks/aws"
version = "13.2.1"
# insert the 7 required variables here
}
Readme
Inputs (61)
Outputs (34)
Dependencies (6)
Resources (42)
terraform-aws-eks

# Useful links

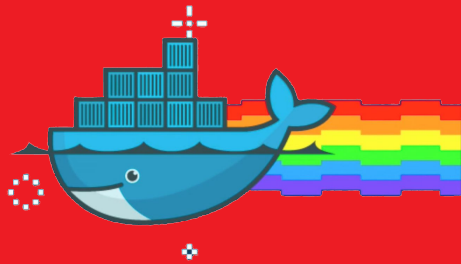
**Show notes: https://be34.me/show-notes**

1. https://www.youtube.com/watch?v=pgfercQz_ko - Terraform-им AWS
2. https://www.youtube.com/watch?v=hDVWGOYoets - Fast, Fine, Affordable
3. https://github.com/antonbabenko/terraform-best-practices
4. https://learnk8s.io/terraform-eks
5. https://github.com/eng-Zubr/AWS-EKS-launchpad

# Conclusion



May the Cloud be with you!

# Thank you!

→ Questions?