kubernetes

Nick Brandaleone, AWS Solutions Architect

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What is Kubernetes?

Open source container management platform

Helps you run containers at scale

Gives you primitives for building modern applications

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WHY DEVELOPERS LOVE **KUBERNETES**

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Why developers love Kubernetes

Vibrant and growing community of users and contributors

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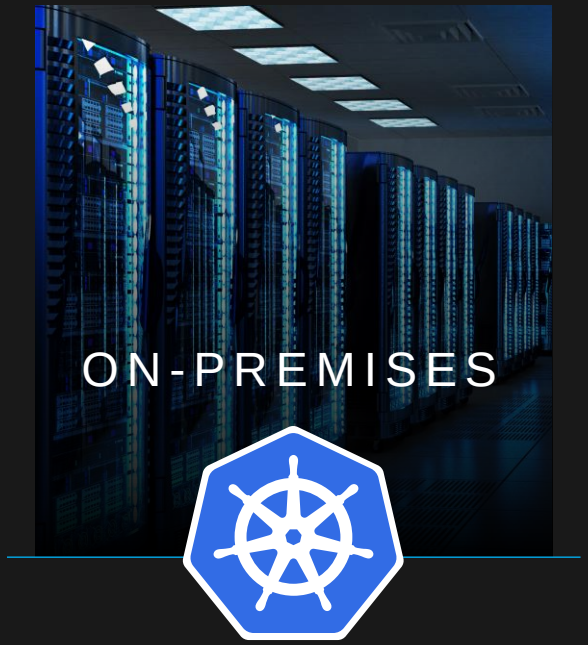
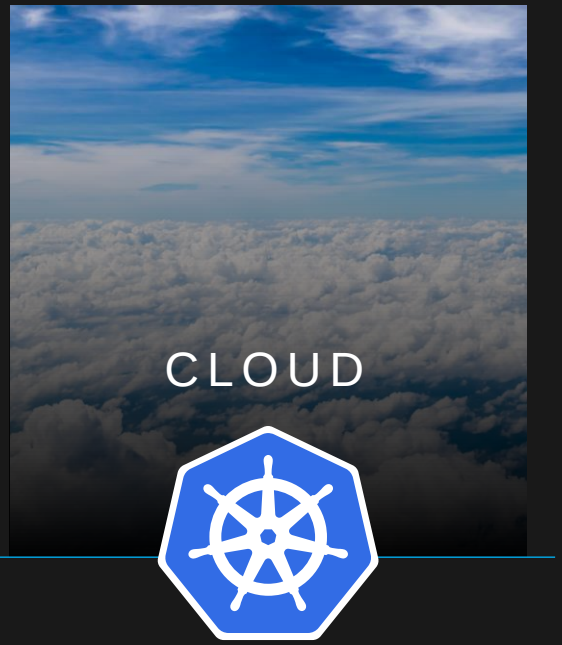
Why developers love Kubernetes

Kubernetes can be run anywhere





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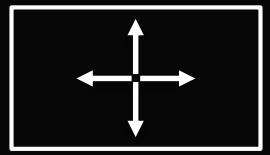
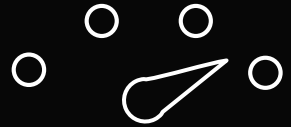
Why developers love Kubernetes

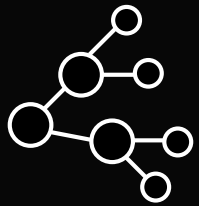
A single extensible API



SCALE



PERFORMANCE



BREADTH

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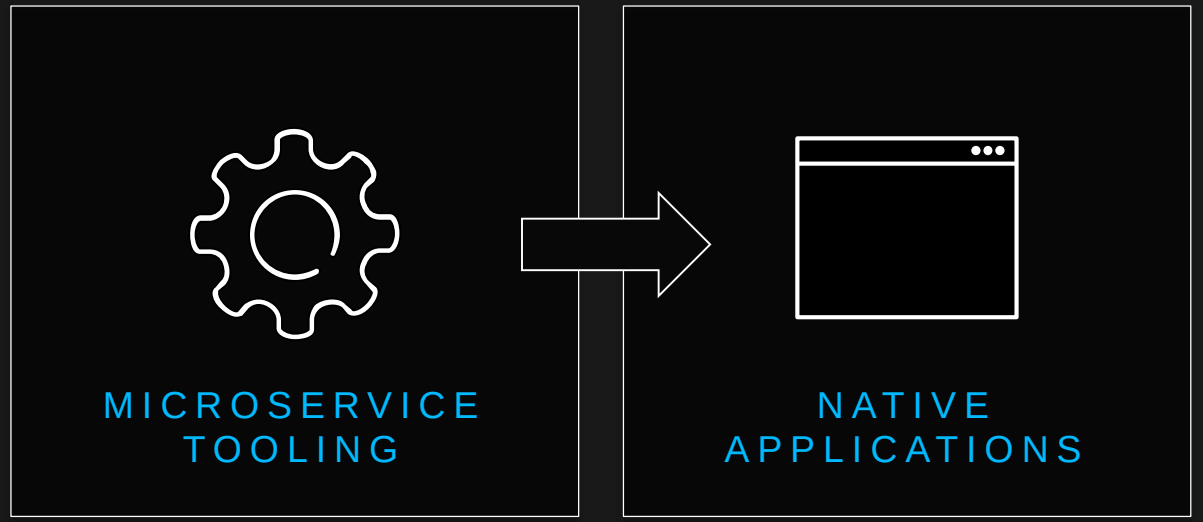
Cloud-Native Applications



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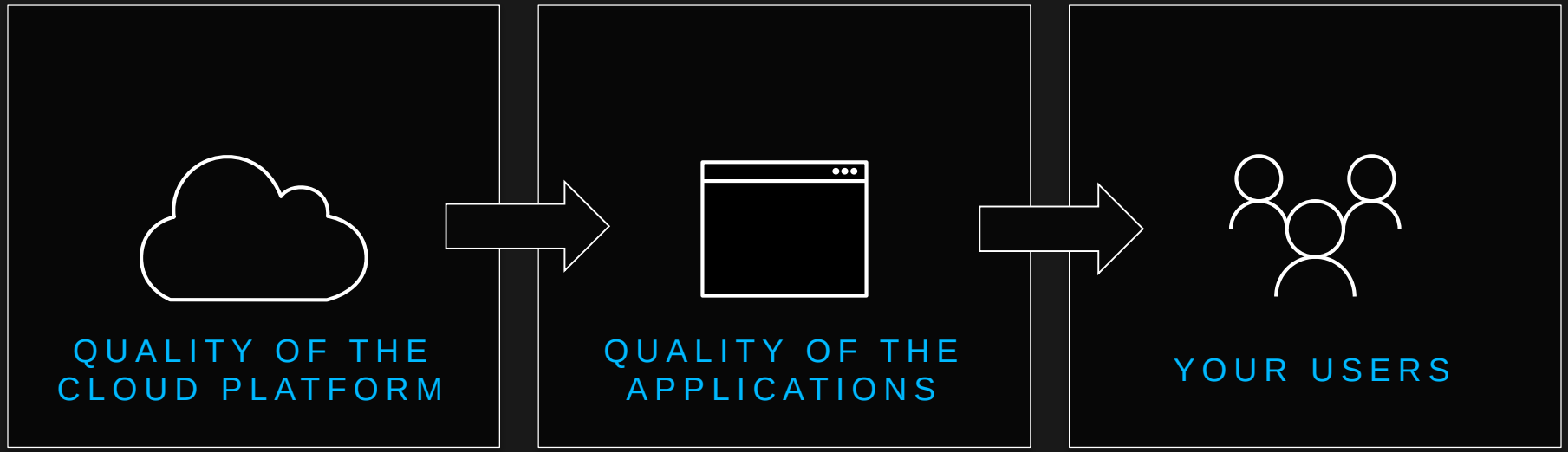
But *where* you run K8s matters



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63%

of Kubernetes workloads run on AWS today

—CNCF survey

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Kubernetes on AWS

3x Kubernetes Master Nodes (for HA)

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Kubernetes Master

API Server

Controller Manager

Cloud Controller

Scheduler

KubeDNS

Add-ons

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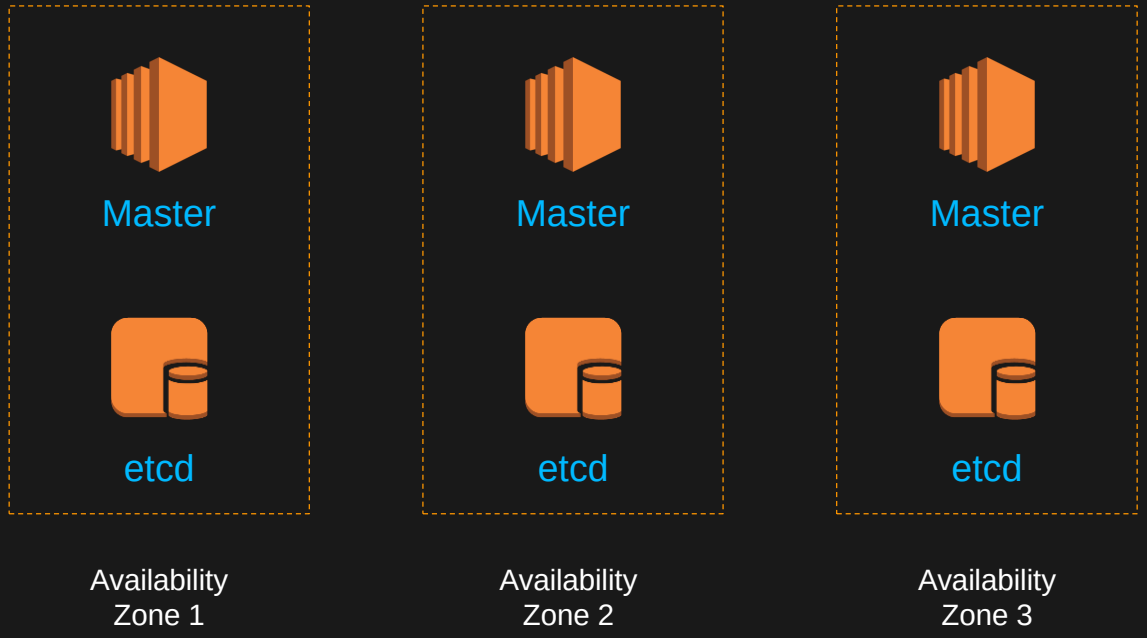

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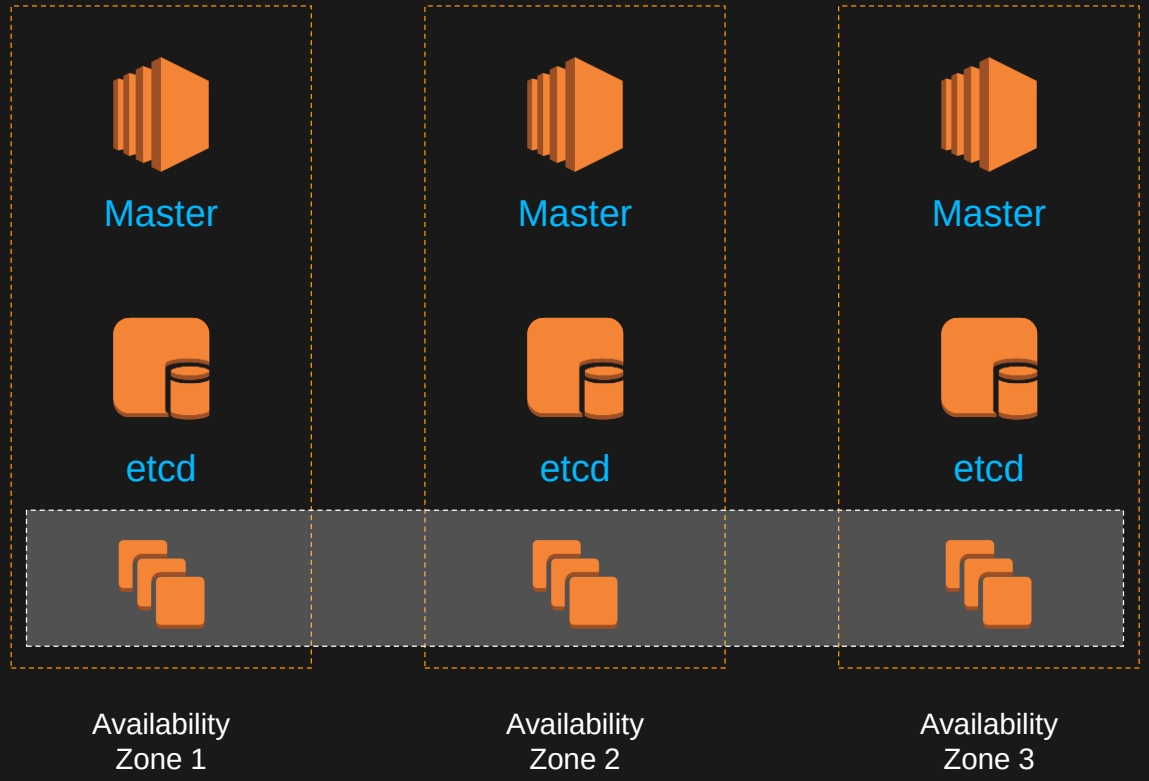

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“Run Kubernetes for me.”

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“Native AWS Integrations.”

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"An Open Source Kubernetes Experience."

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Amazon EKS

ELASTIC CONTAINER SERVICE FOR KUBERNETES (EKS)

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Tenet 1

EKS is a platform for enterprises
to run production-grade workloads

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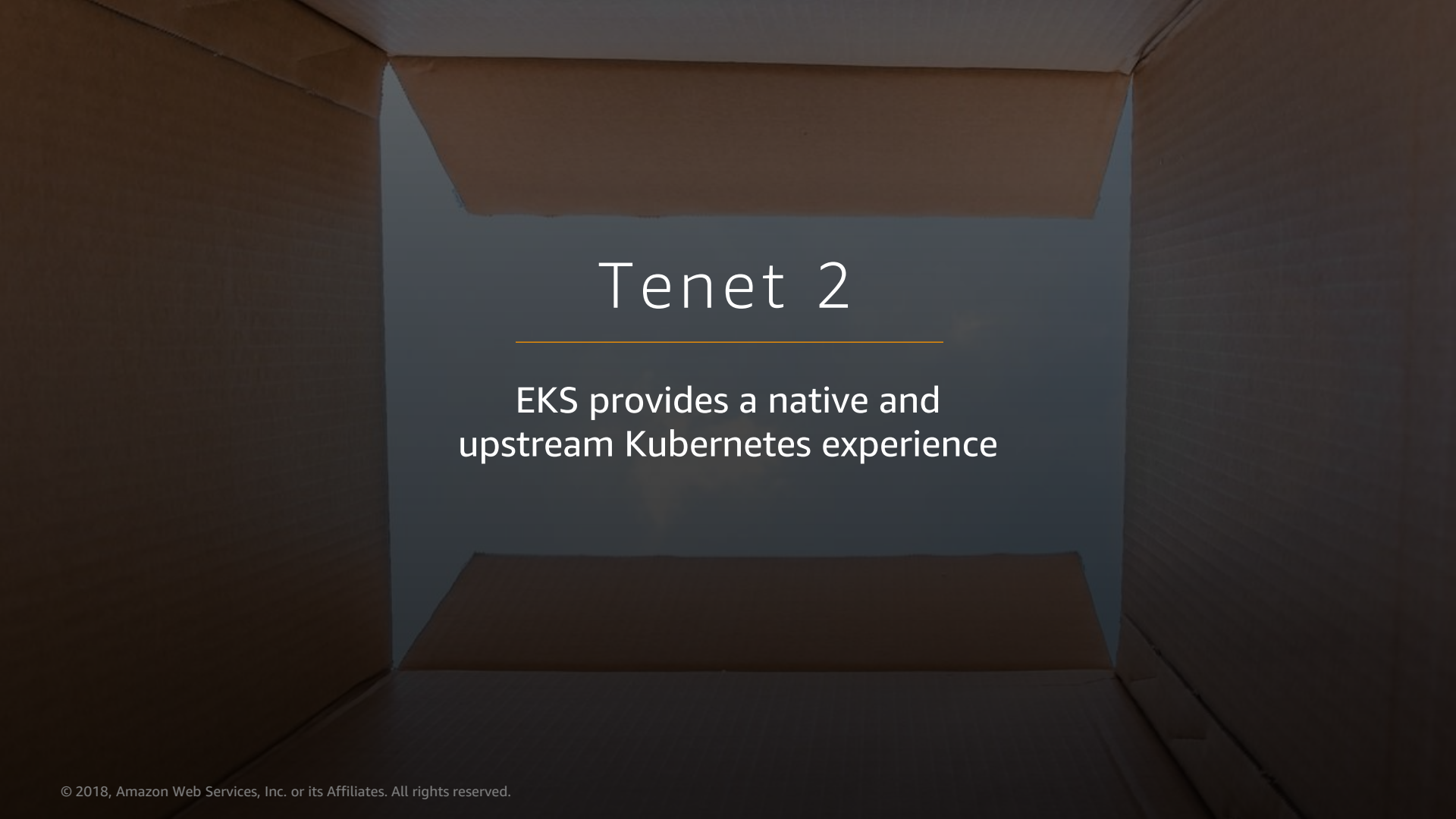

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Tenet 3

If EKS customers want to use additional AWS services, the integrations are seamless and eliminate undifferentiated heavy lifting

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Tenet 4

EKS team actively contributes
to the Kubernetes project

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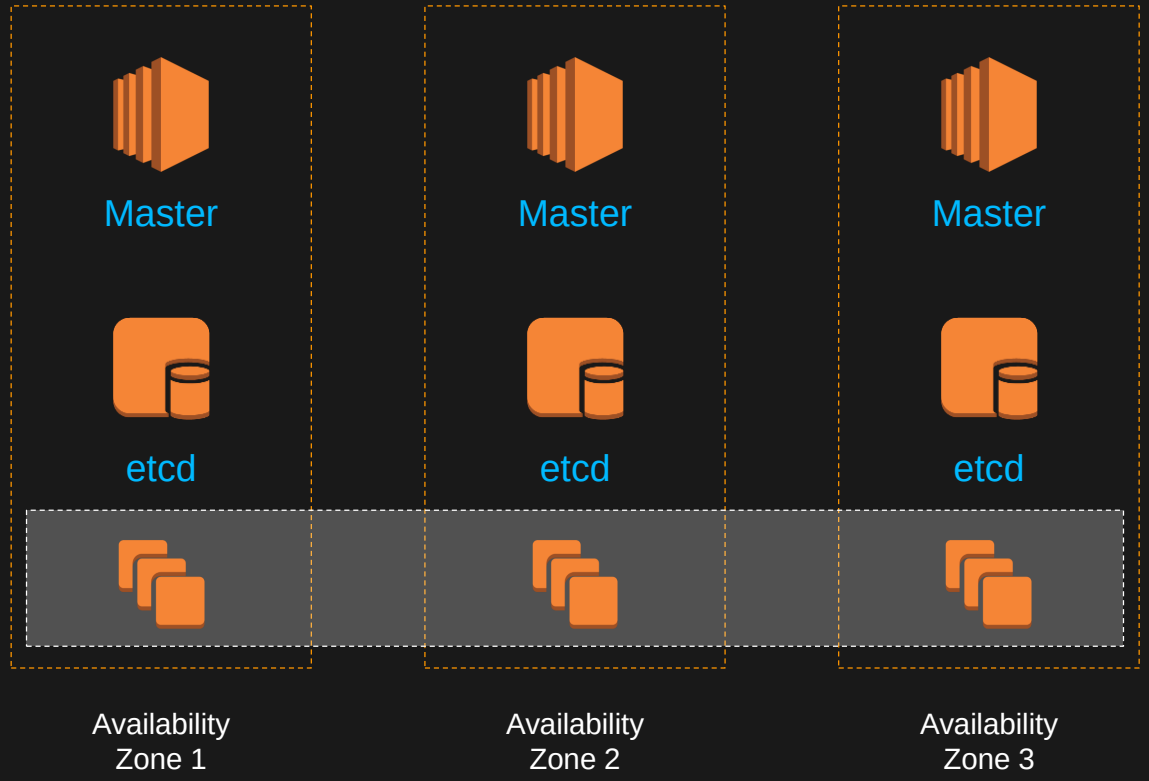

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DEMO!

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```
aws eks create-cluster –cluster-name reinvent2017 –desired-master-version 1.7
–role-arn arn:aws:iam::account-id:role/role-name
```

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```
aws eks describe-cluster –cluster-name reinvent2017
```

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```
aws eks list-clusters
```

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```
aws eks delete-cluster –cluster-name
reinvent2017
```

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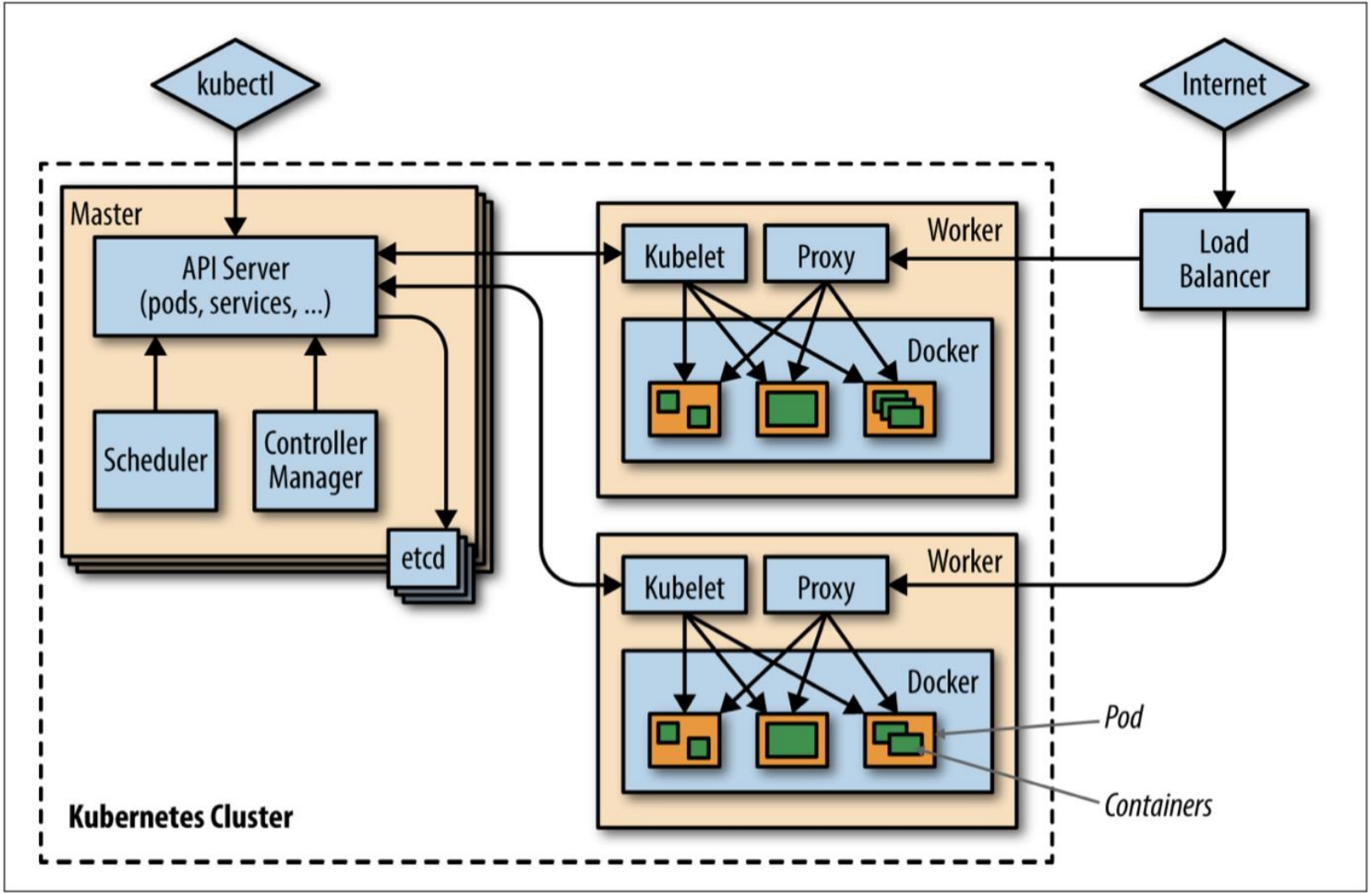
EKS Master Configuration


kubectl
Internet
Master
API Server
(pods, services, ...)
Scheduler
Controller
Manager
etcd
Worker
Kubelet
Proxy
Docker
Load
Balancer
Worker
Kubelet
Proxy
Docker
Pod
Containers
Kubernetes Cluster

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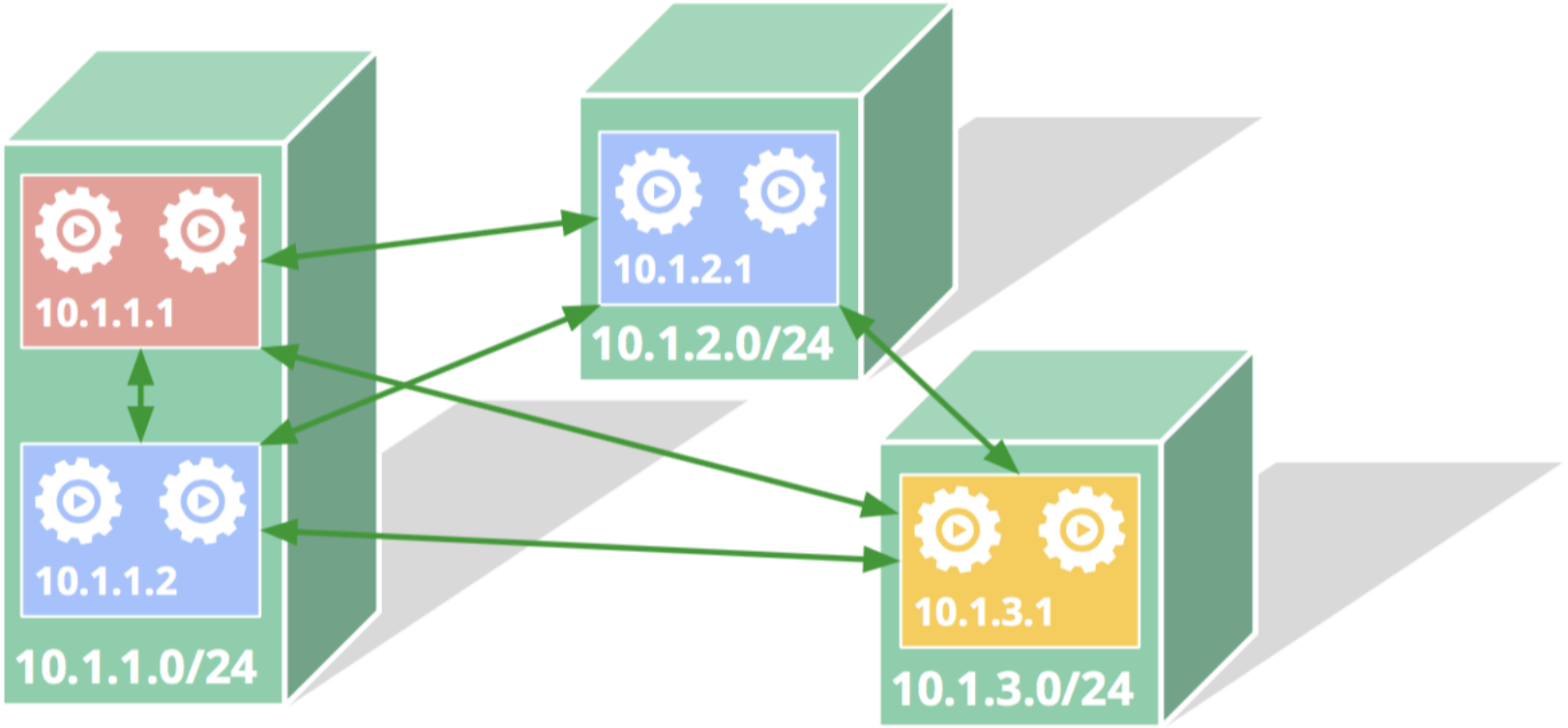
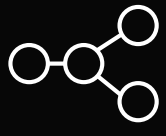
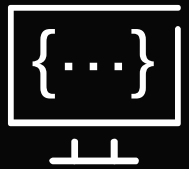
Kubernetes networking





Native VPC networking with CNI plugin



Pods have the same VPC address inside the pod as on the VPC

Simple, secure networking

Open source and on Github

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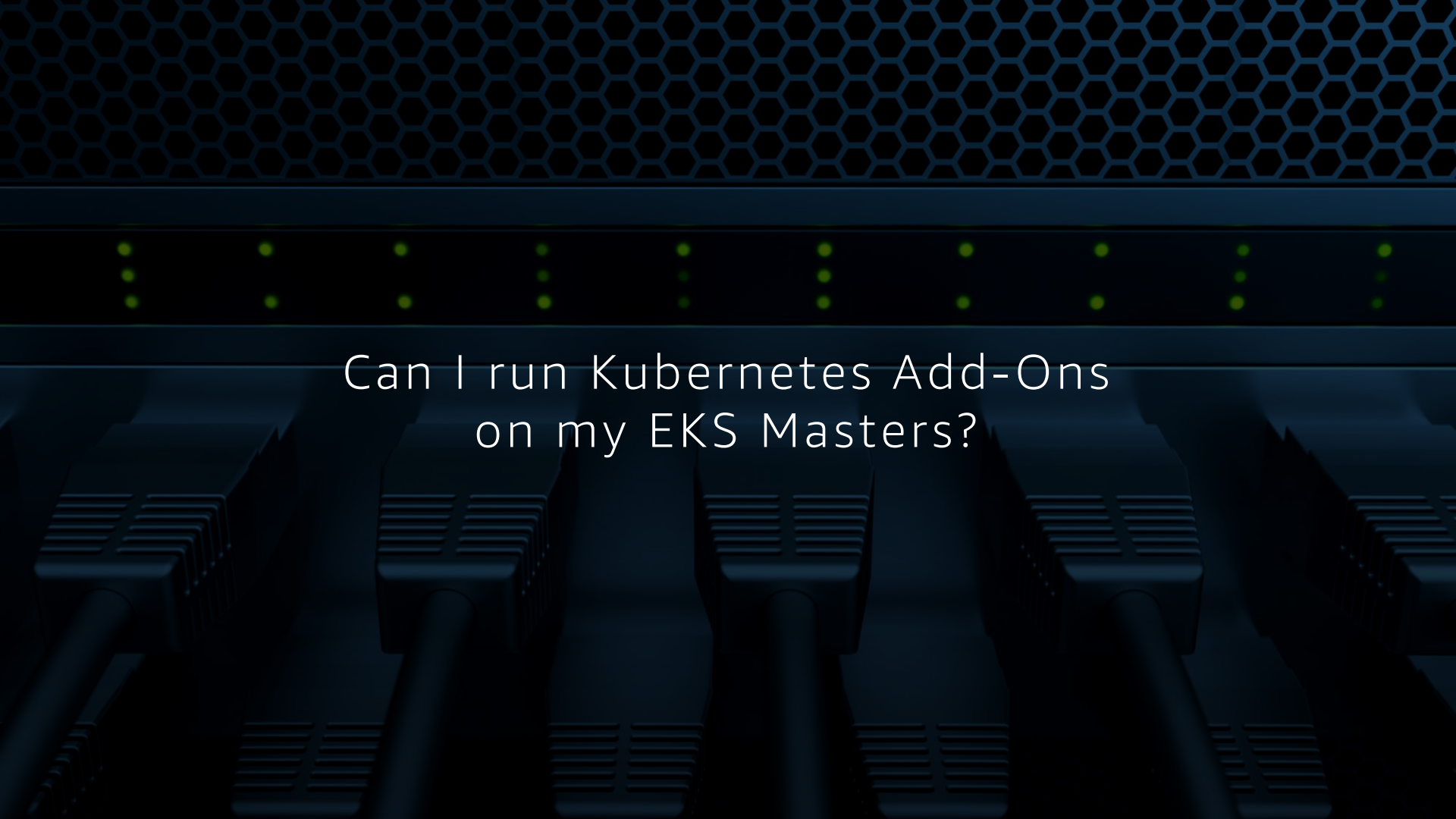
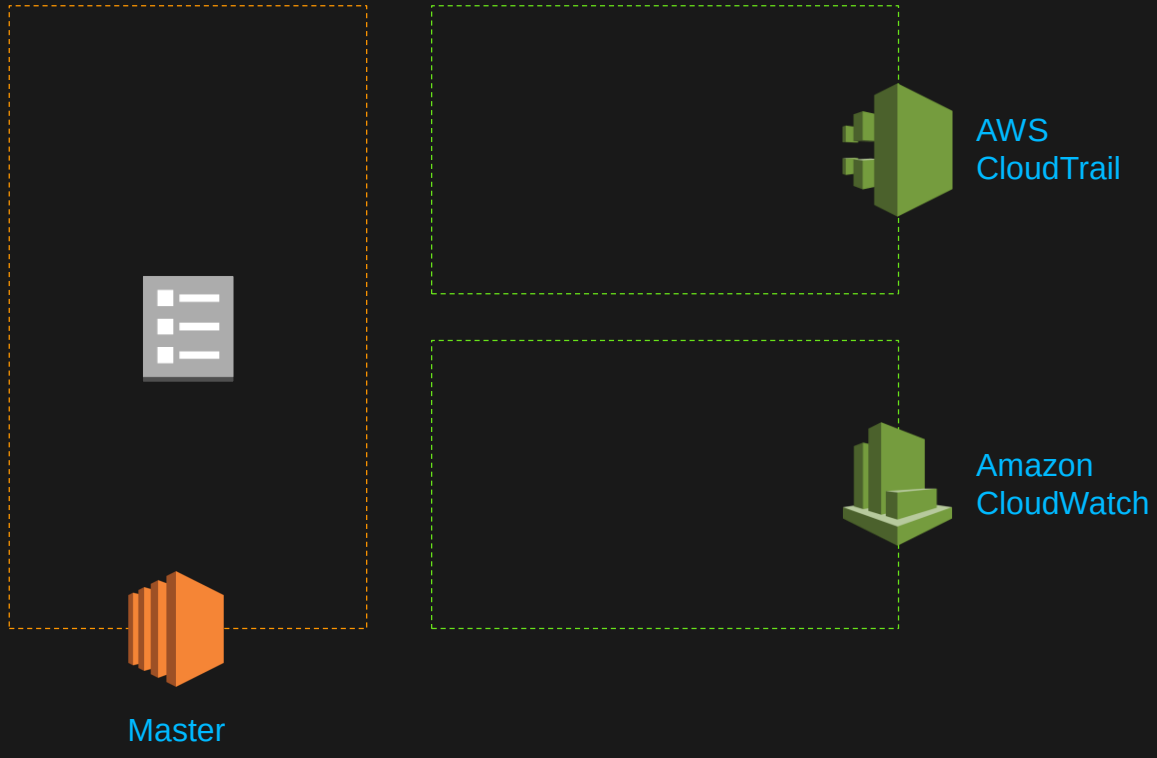
VPC CNI plugin

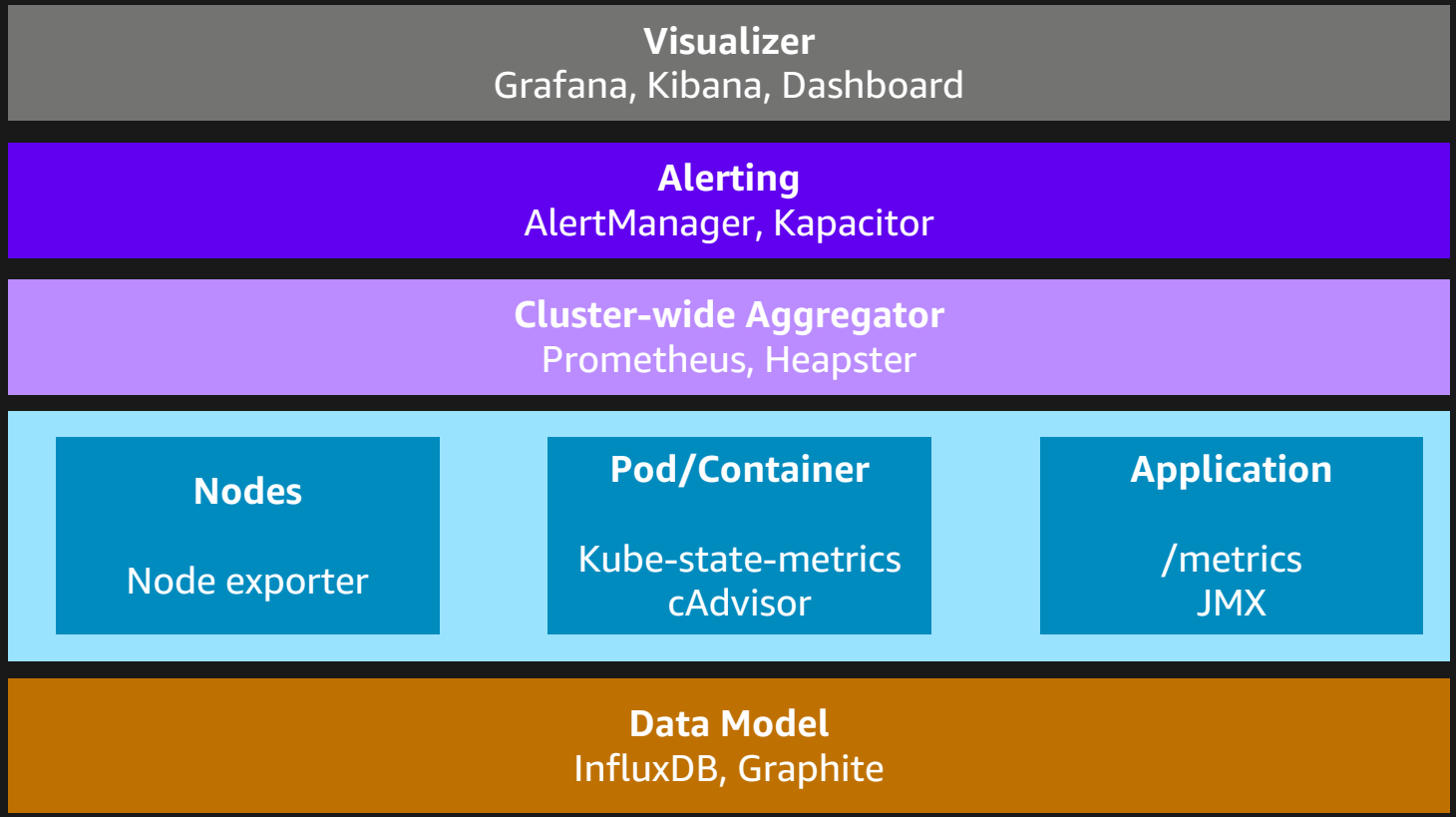
- Bridge between the K8s land – AWS VPC
  - AWS Routable IPs
- Thin layer – no performance impact
- Pod IP ⟵ ENI secondary IP


Can I run Kubernetes Add-Ons
on my EKS Masters?

EKS Master Visibility


AWS
CloudTrail
Amazon
CloudWatch
Master

Metrics



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How do I provision EKS Worker Nodes?

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How does IAM authentication work with Kubernetes?

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Heptio IAM Authenticator

An open source approach to integrating
AWS IAM authentication with Kubernetes

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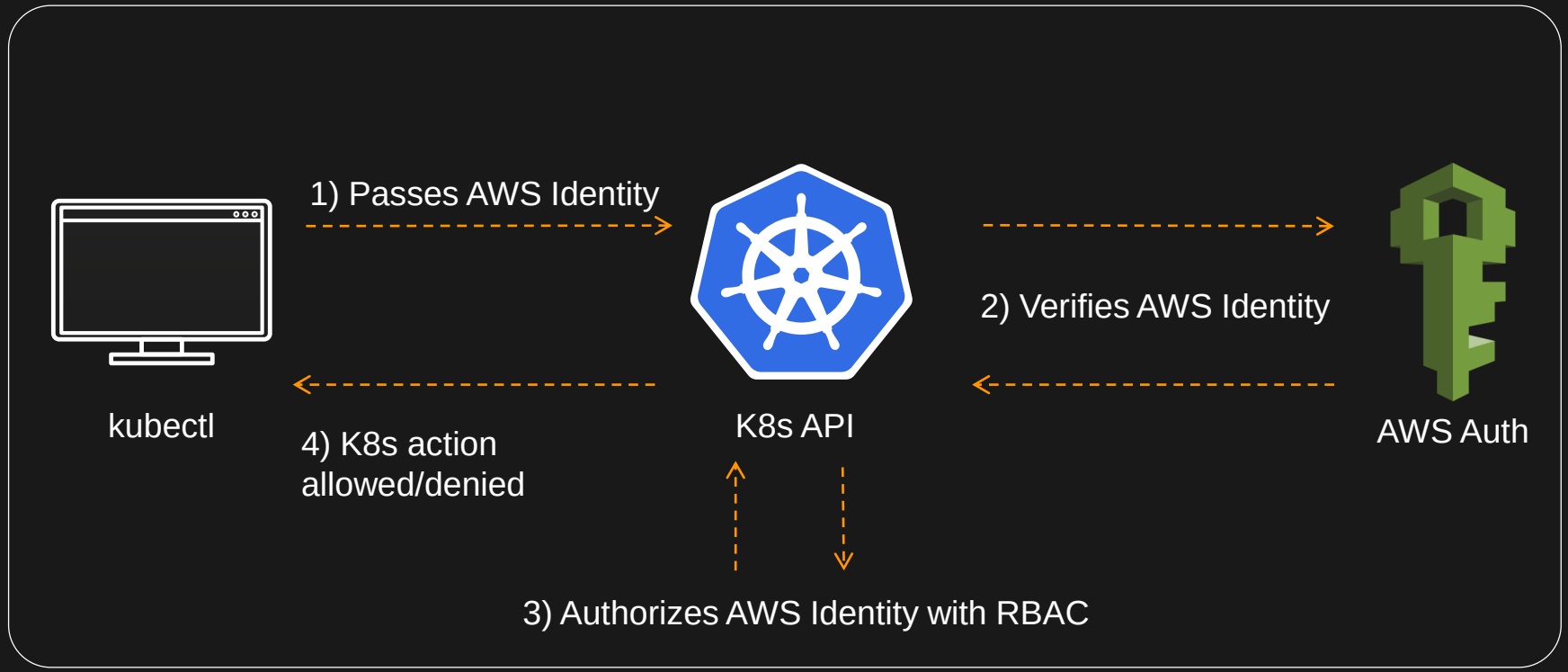

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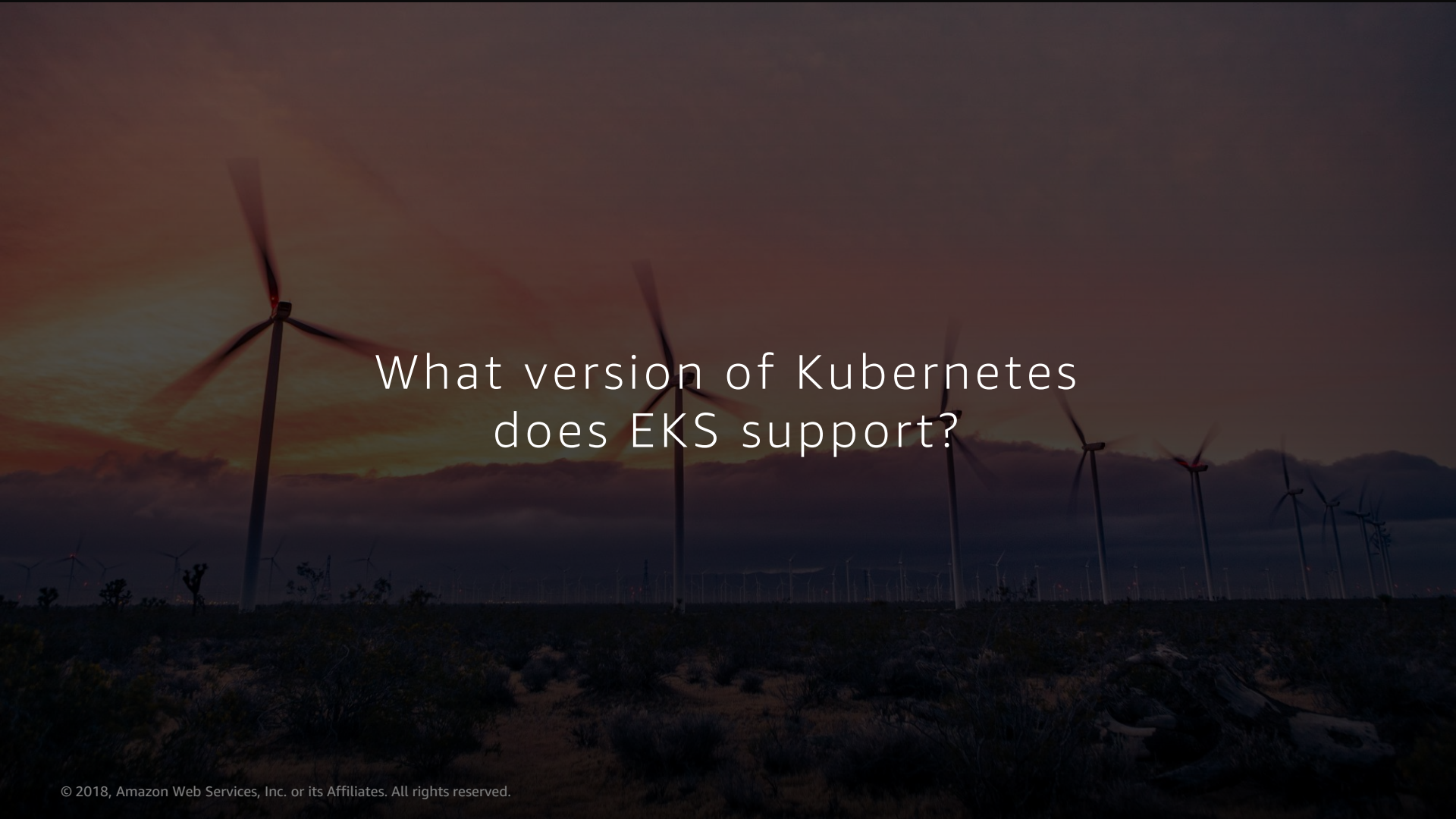

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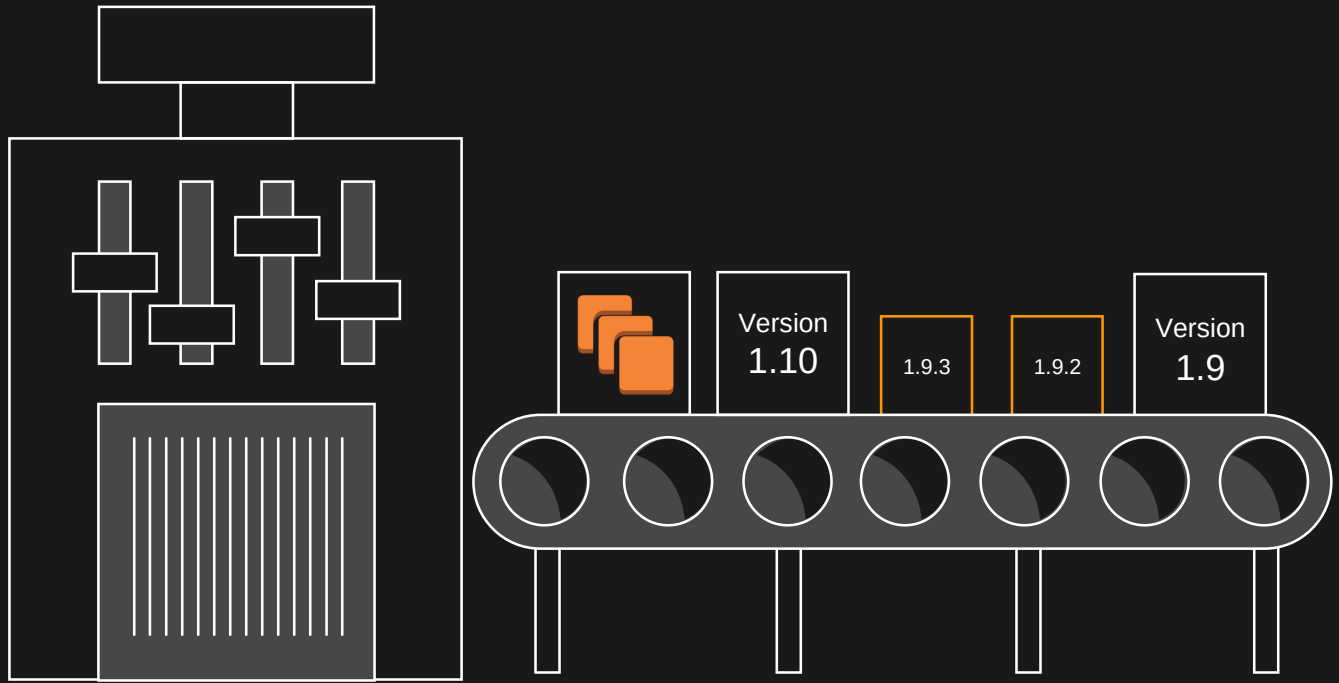

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Can I use PrivateLink Endpoints with EKS?

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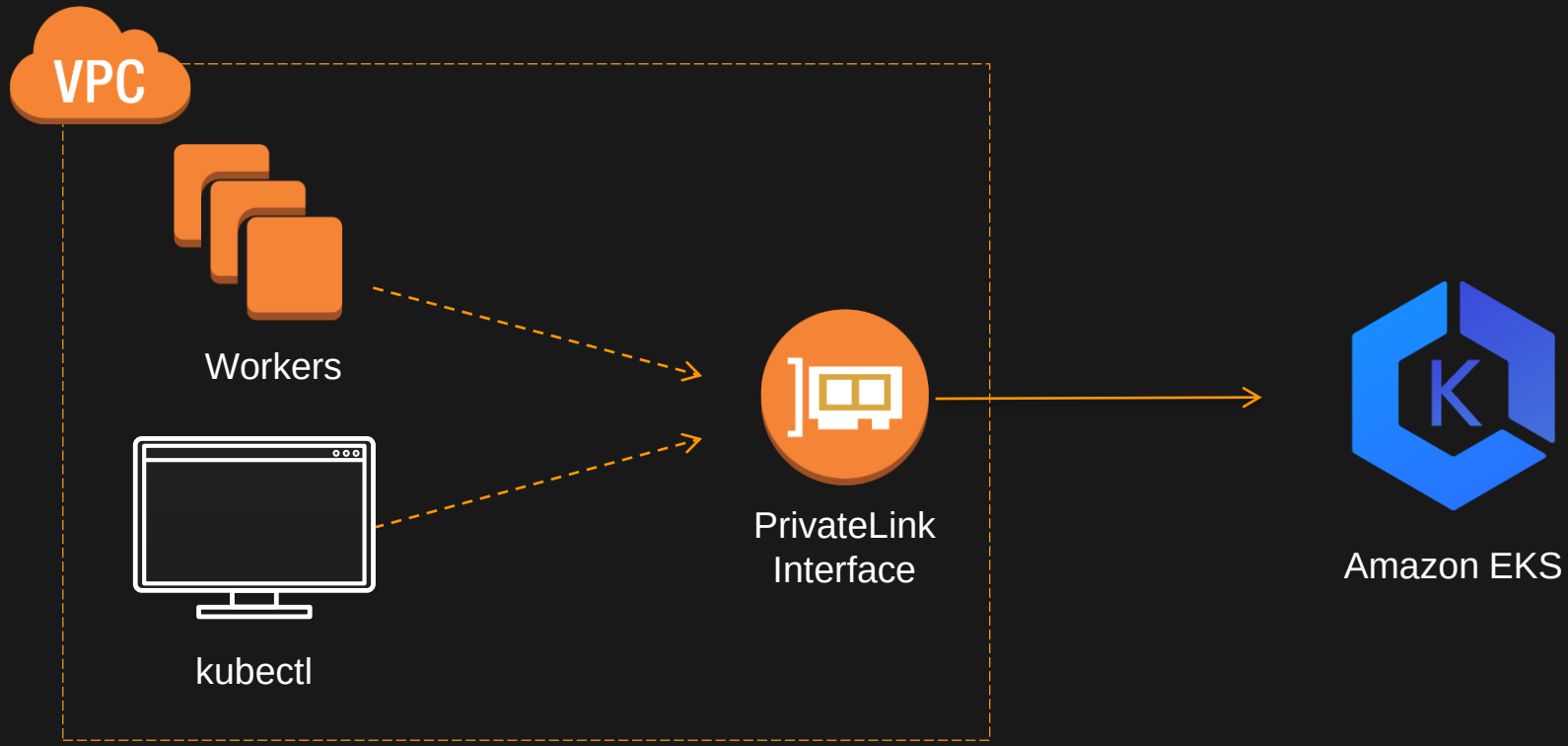

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MORE KUBERNETES

Kubernetes on AWS Workshop:

http://amzn.to/k8s-on-aws

EKS FAQ:

https://aws.amazon.com/eks/

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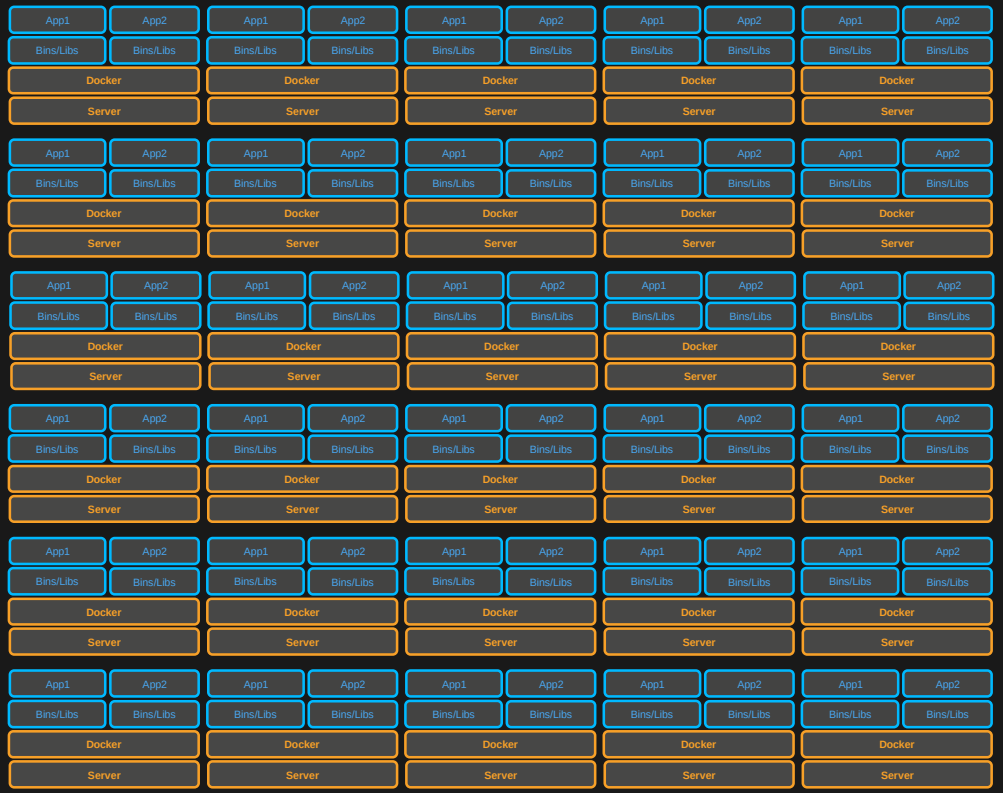
DEPLOYING CONTAINERS

Hundreds of hosts with thousands of containers

…OK, this is hard w/o help…

Amazon ECS



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