



kubernetes

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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



WHY DEVELOPERS LOVE **KUBERNETES**

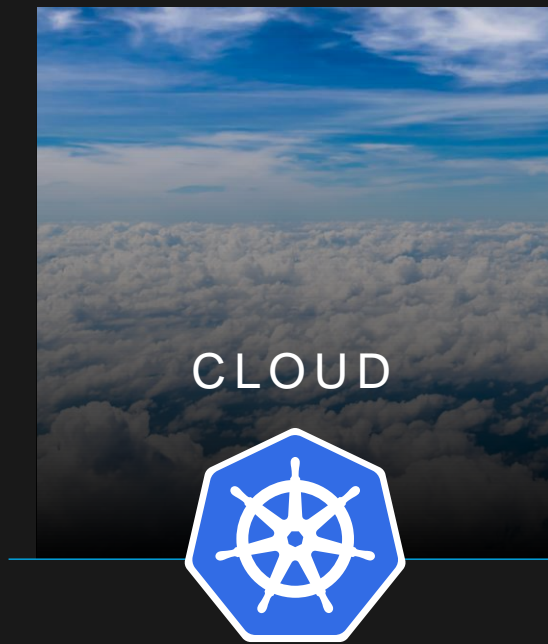
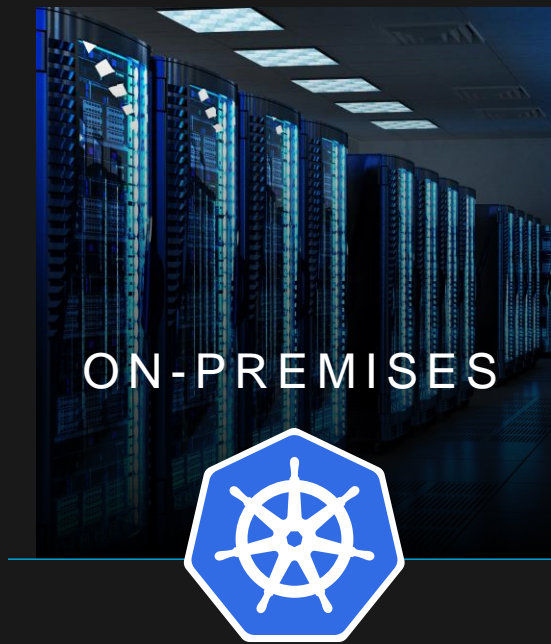


Why developers love Kubernetes

Vibrant and growing community
of users and contributors

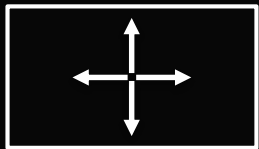
Why developers love Kubernetes

Kubernetes can be run anywhere

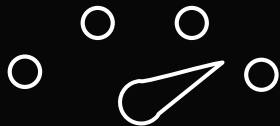


Why developers love Kubernetes

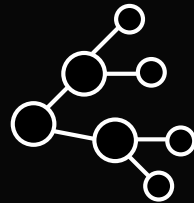
A single extensible API



SCALE

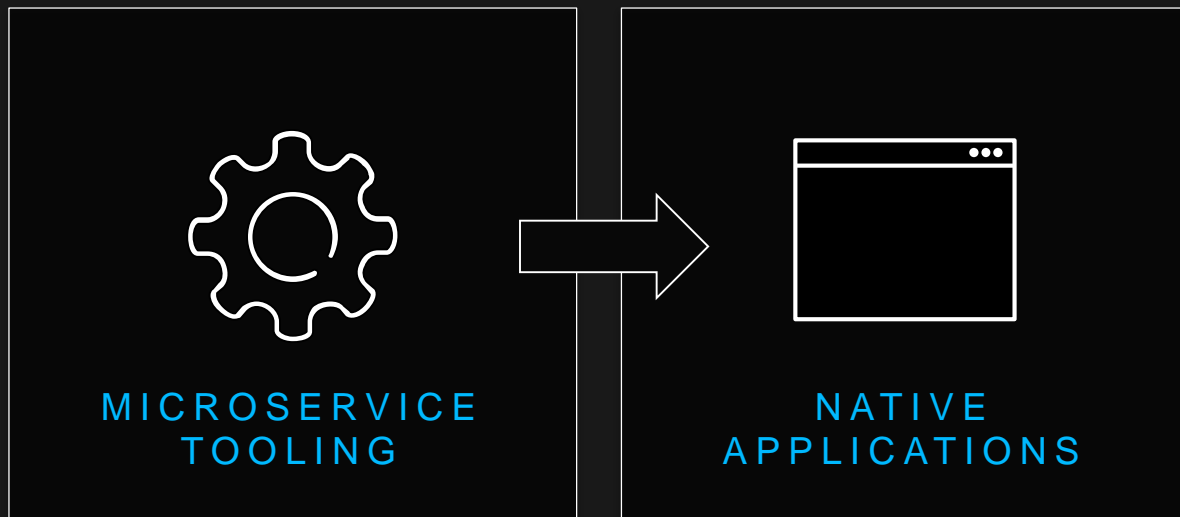


PERFORMANCE

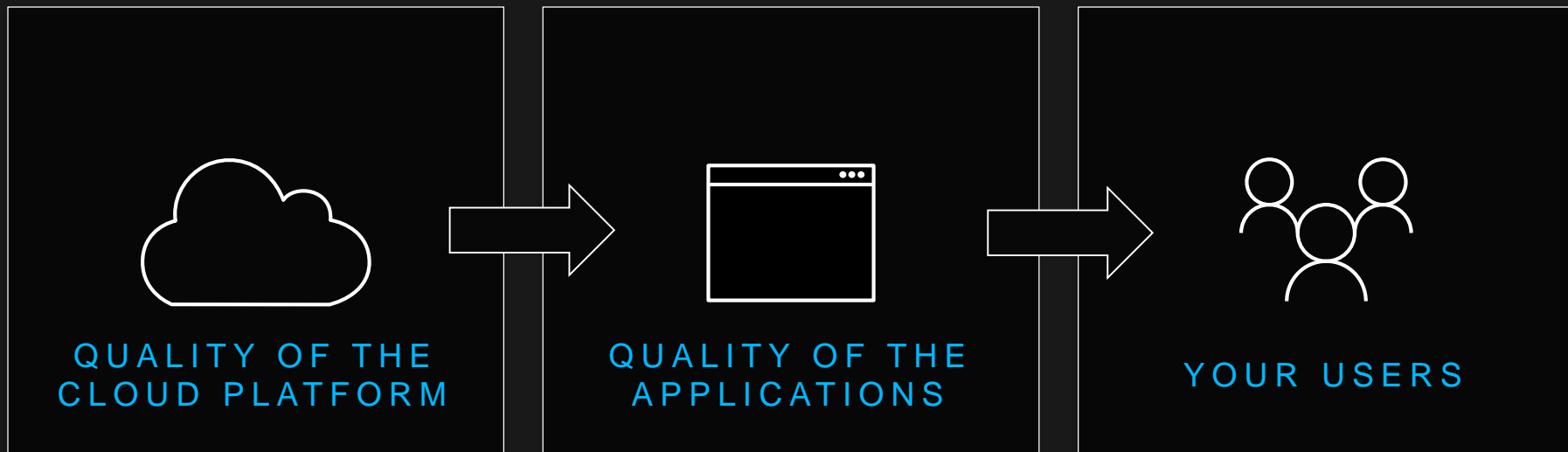


BREADTH

Cloud-Native Applications



But *where* you run K8s matters





63%

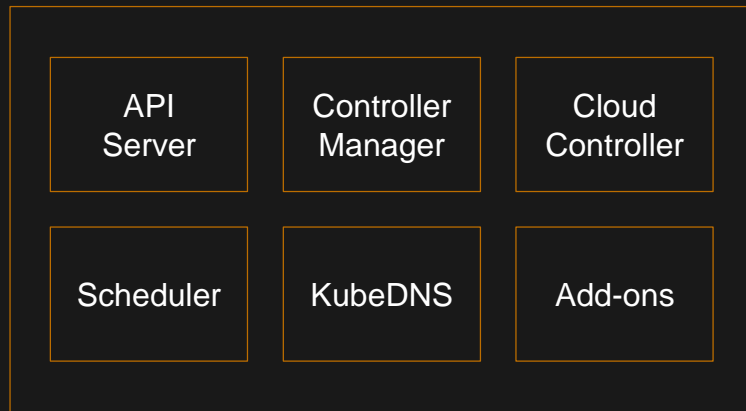
of Kubernetes workloads
run on AWS today
—CNCF survey

Kubernetes on AWS



3x Kubernetes Master Nodes (for HA)

Kubernetes Master





Master



etcd

Availability
Zone 1



Master



etcd

Availability
Zone 2

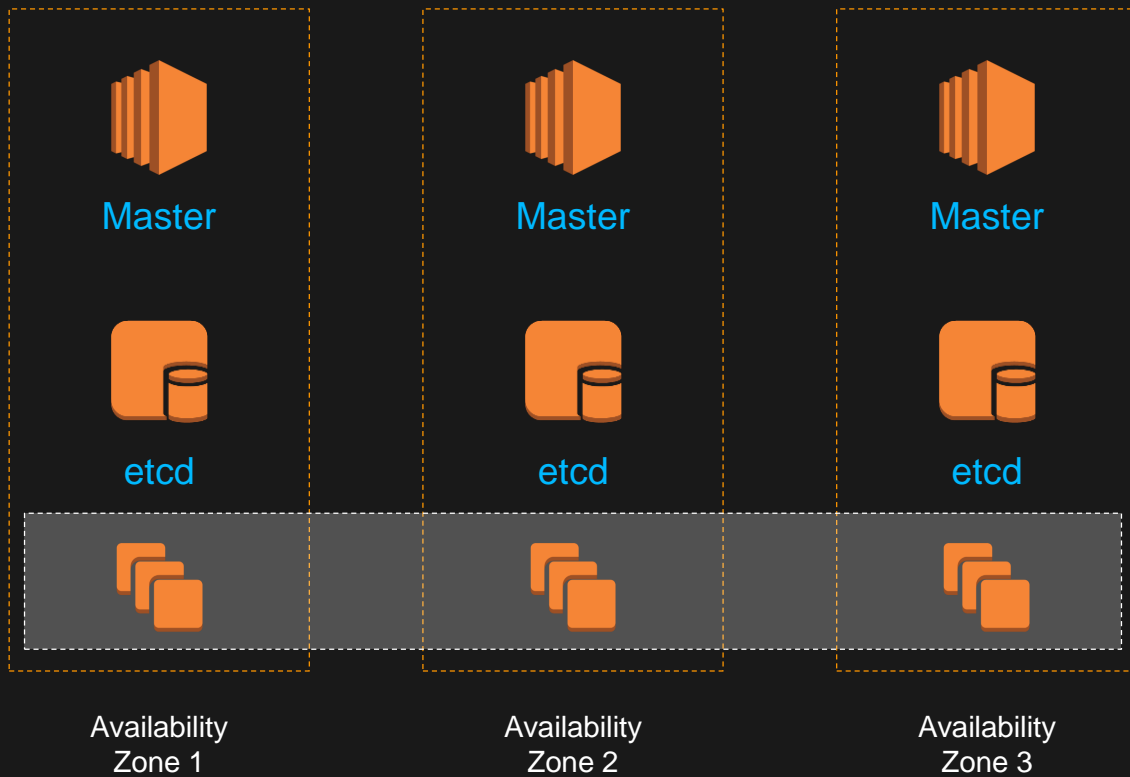


Master



etcd

Availability
Zone 3



Make AWS the
BEST PLACE
to run **ANY**
containerized applications



"Run Kubernetes for me."



“Native AWS Integrations.”



"An Open Source Kubernetes Experience."



Amazon EKS

ELASTIC CONTAINER SERVICE FOR KUBERNETES
(EKS)



Tenet 1

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

Tenet 2

EKS provides a native and
upstream Kubernetes experience

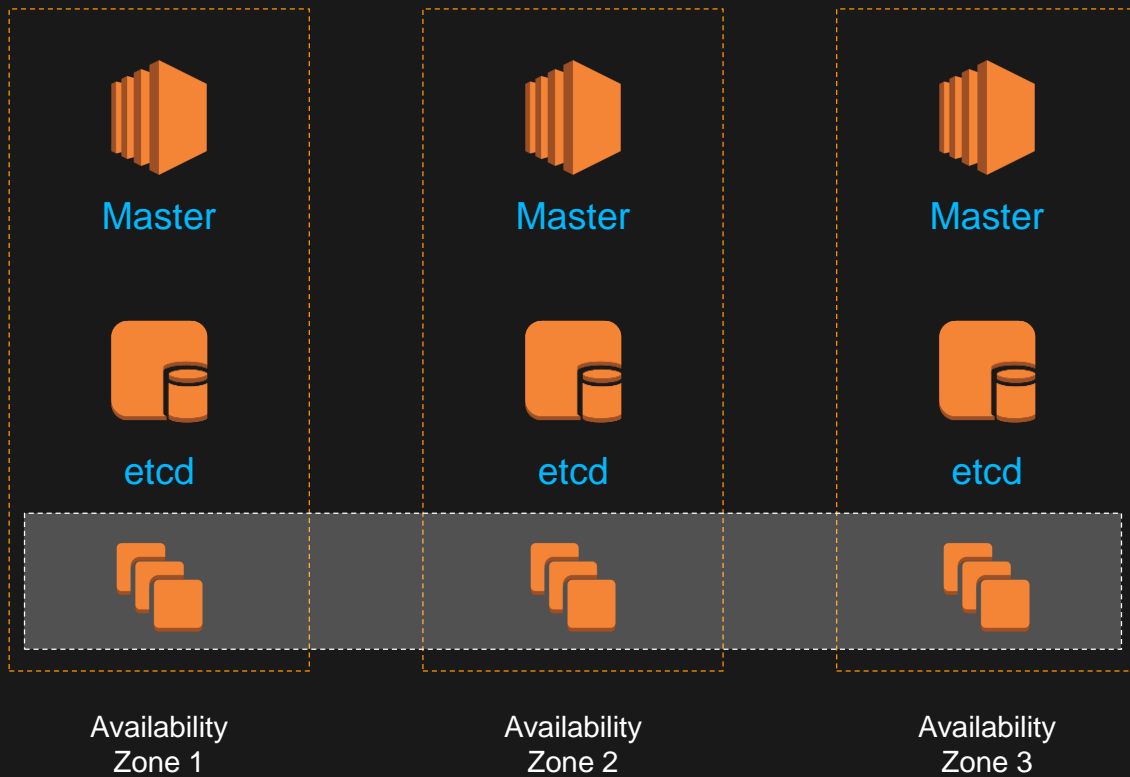
Tenet 3

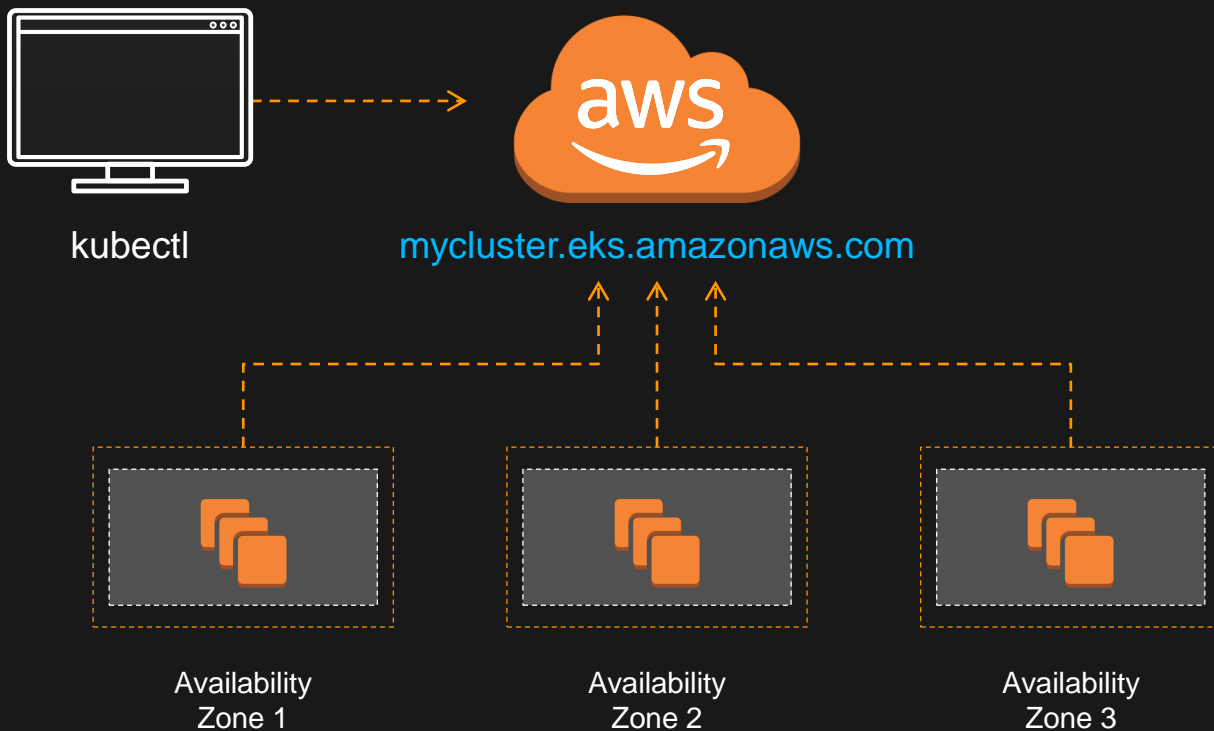
If EKS customers want to use additional AWS services, the integrations are seamless and eliminate undifferentiated heavy lifting



Tenet 4

EKS team actively contributes
to the Kubernetes project





DEMO!

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

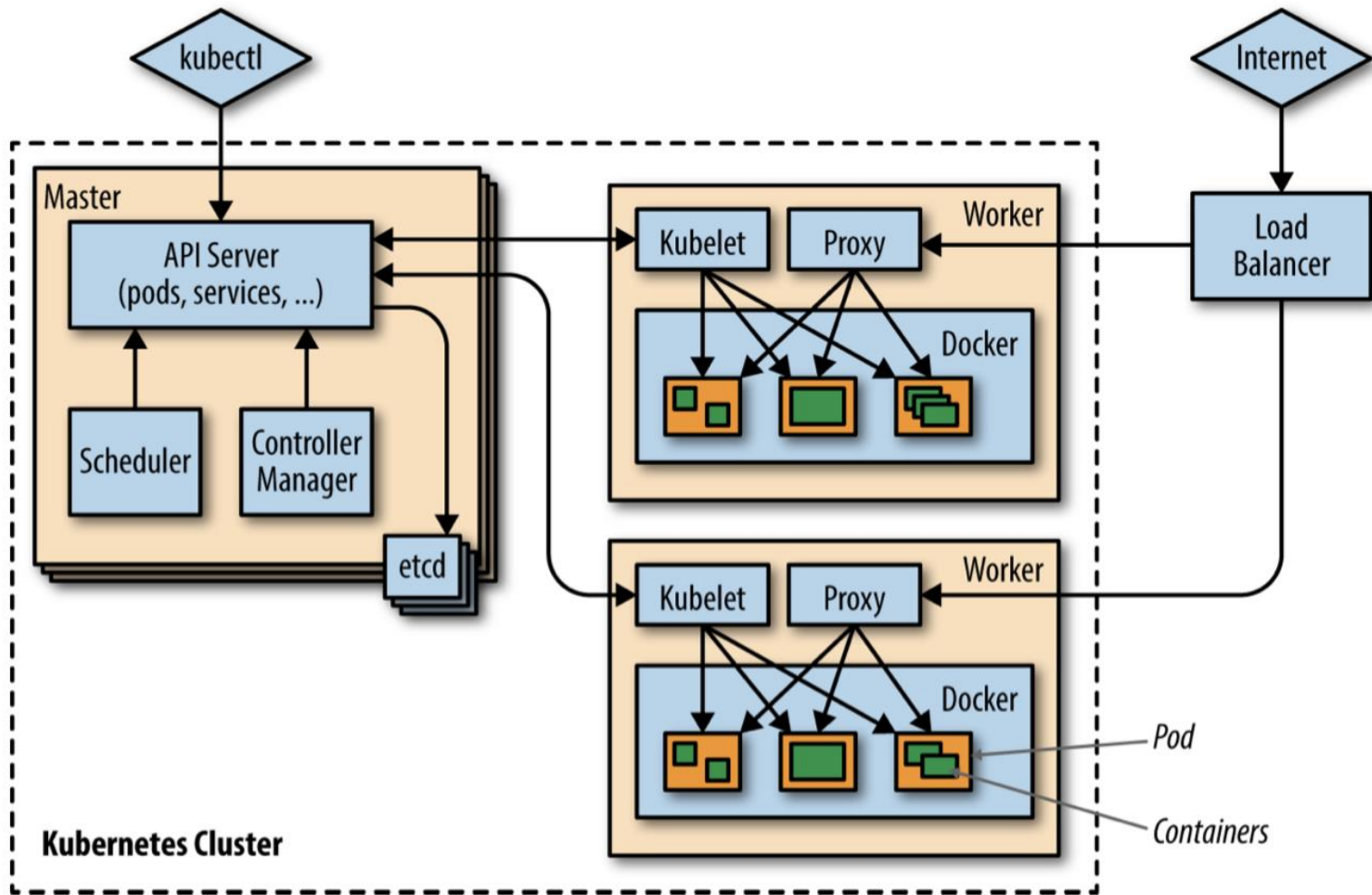
```
aws eks describe-cluster --cluster-name reinvent2017
```

```
aws eks list-clusters
```

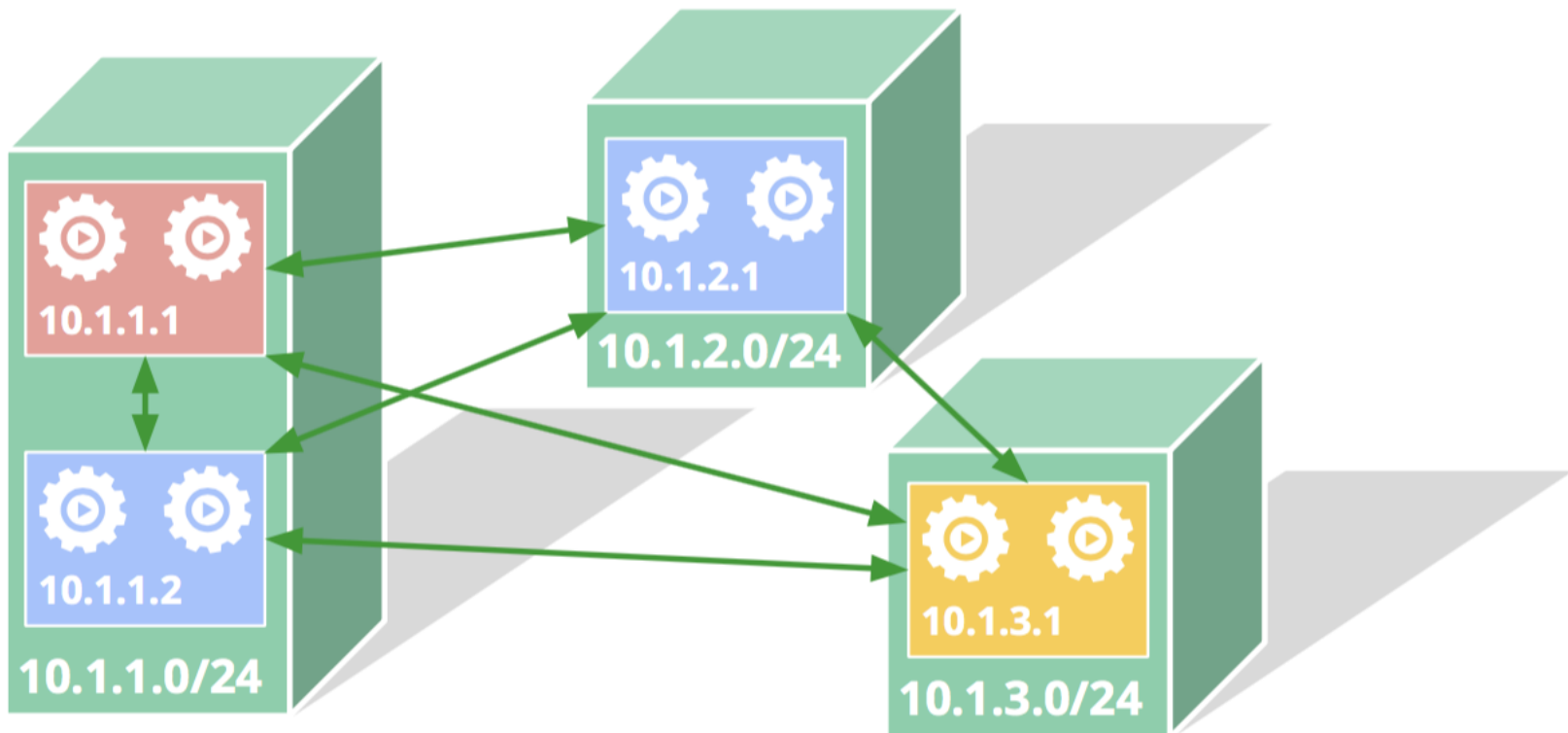
```
aws eks delete-cluster --cluster-name  
reinvent2017
```

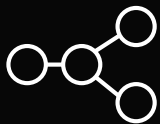
The background of the slide is a dark purple field filled with a complex, interconnected network of thin, lighter purple lines. These lines form a mesh-like structure that appears to be composed of many small, interconnected triangles or polygons. The overall effect is a sense of depth and complexity, reminiscent of a neural network or a data visualization of a complex system. The lines are more concentrated in some areas, creating a sense of movement and flow.

EKS Master Configuration

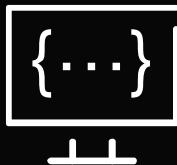


Kubernetes networking





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

VPC CNI plugin

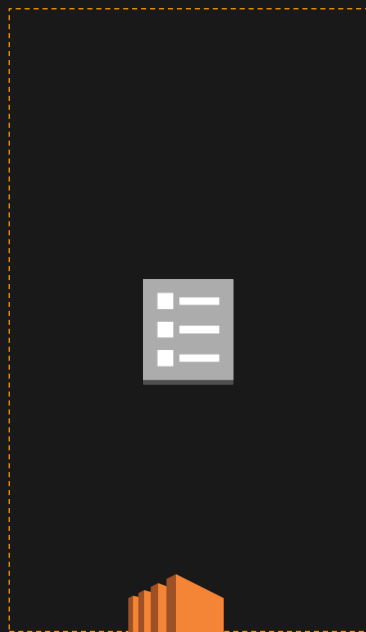
- Bridge between the K8s land – AWS VPC
 - AWS Routable IPs
- Thin layer – no performance impact
- Pod IP  ENI secondary IP



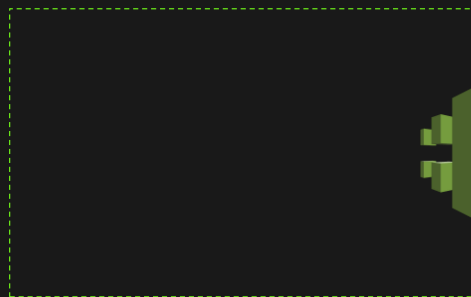
Can I run Kubernetes Add-Ons
on my EKS Masters?

EKS Master Visibility

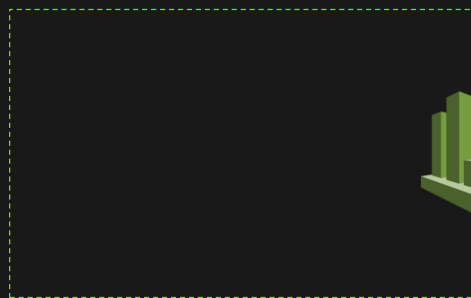
```
def operation == "MIRROR Y":
    mirror_mod.use_x = False
    mirror_mod.use_y = True
    mirror_mod.use_z = False
elif operation == "MIRROR Z":
    mirror_mod.use_x = False
    mirror_mod.use_y = False
    mirror_mod.use_z = True
    #selection at the end -add back the deselected mirror modifier object
    mirror_ob.select= 1
    modifier_ob.select=1
    bpy.context.scene.objects.active = modifier_ob
    print("Selected" + str(modifier_ob)) # modifier ob is the active ob
    #mirror_ob.select = 0
    done = bpy.context.selected_objects[0]
    bpy.data.objects[mirror_ob.name].select = 1
```



Master

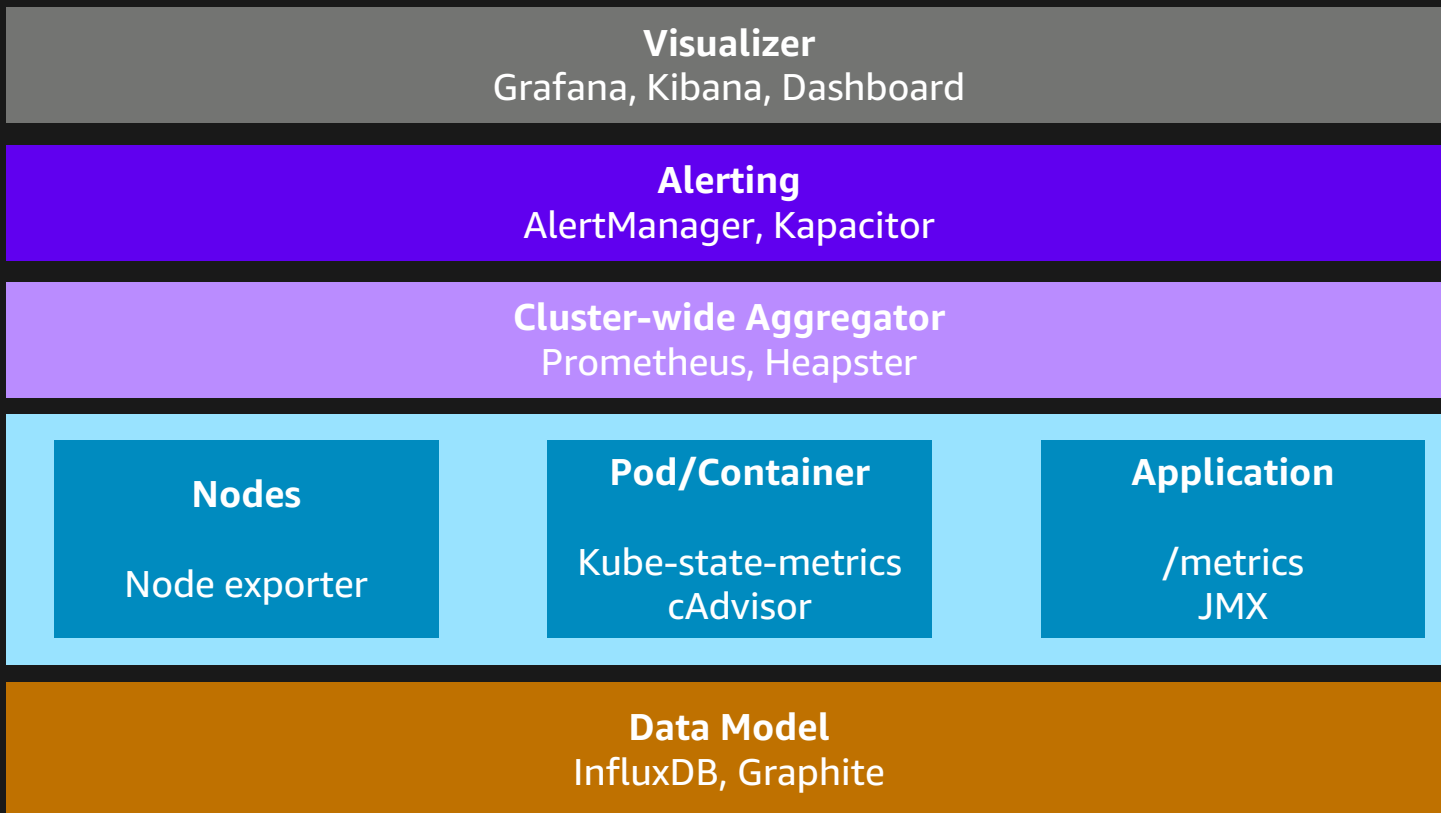


AWS
CloudTrail



Amazon
CloudWatch

Metrics



A hand is shown pulling out a server component, likely a hard drive or SSD, from a server rack. The component is black with a green circuit board visible. The rack has multiple slots, some of which are occupied by similar components. The background is dark and out of focus.

EKS Worker Nodes

How do I provision EKS Worker Nodes?





How does IAM authentication
work with Kubernetes?

Heptio IAM Authenticator

An open source approach to integrating
AWS IAM authentication with Kubernetes





kubectl

1) Passes AWS Identity



4) K8s action
allowed/denied



K8s API



3) Authorizes AWS Identity with RBAC



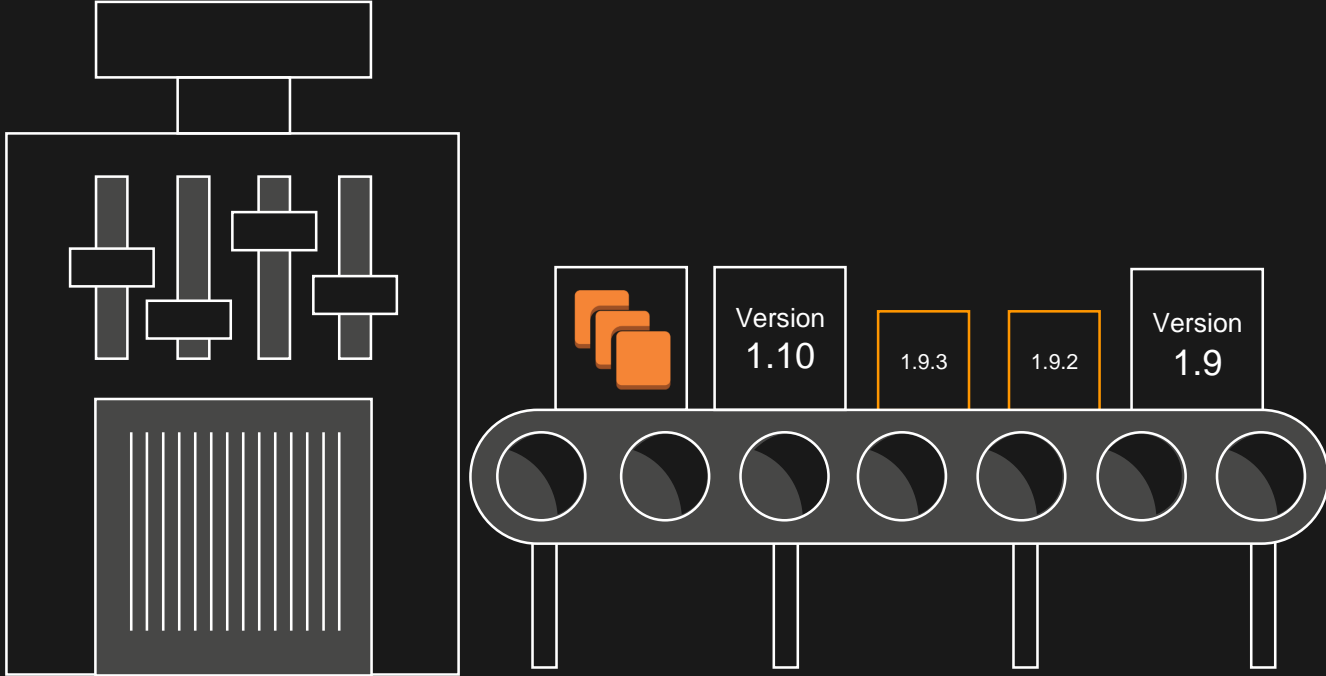
2) Verifies AWS Identity



AWS Auth

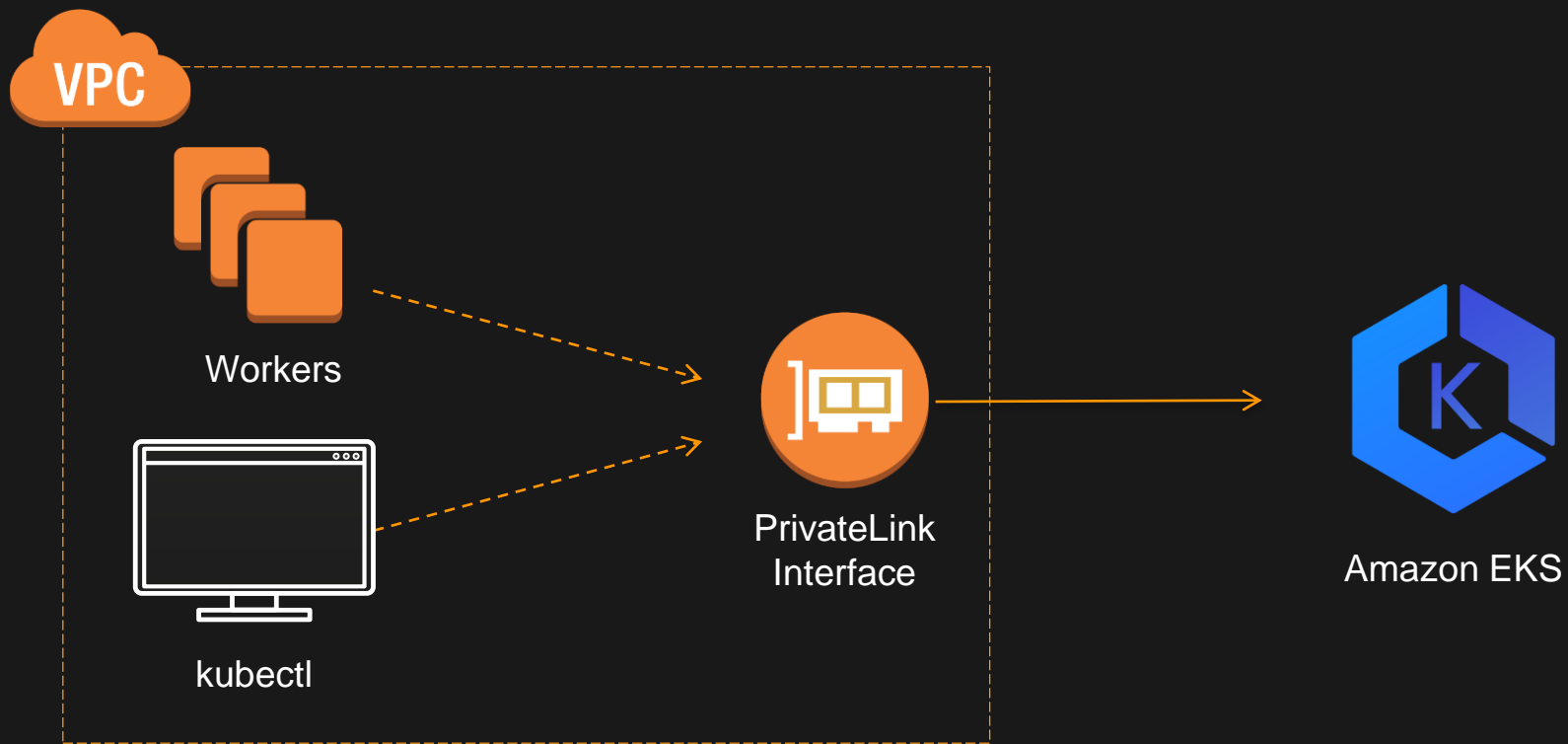
A photograph of a wind farm at sunset. The sky is a mix of orange, red, and dark purple. Several wind turbines are visible, with their blades blurred from motion. The foreground is a dark, scrubby landscape.

What version of Kubernetes
does EKS support?





Can I use PrivateLink Endpoints with EKS?



MORE KUBERNETES

Kubernetes on AWS Workshop:

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

EKS FAQ:

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



DEPLOYING CONTAINERS

Hundreds of hosts with
thousands of containers

...OK, this is hard w/o help...



Amazon ECS



Amazon EKS

