



PUBLIC SECTOR
SUMMIT
MEXICO CITY

TECH304

Running Containers on AWS

Christian Romero
Solutions Architect
AWS

Agenda

Brief introduction on containers

Containers on AWS

Amazon ECS

AWS Fargate

Amazon EKS

The new normal: Companies are increasingly global and products are increasingly digital

47%

of CEOs said they are being challenged by the board of directors to make progress in digital business

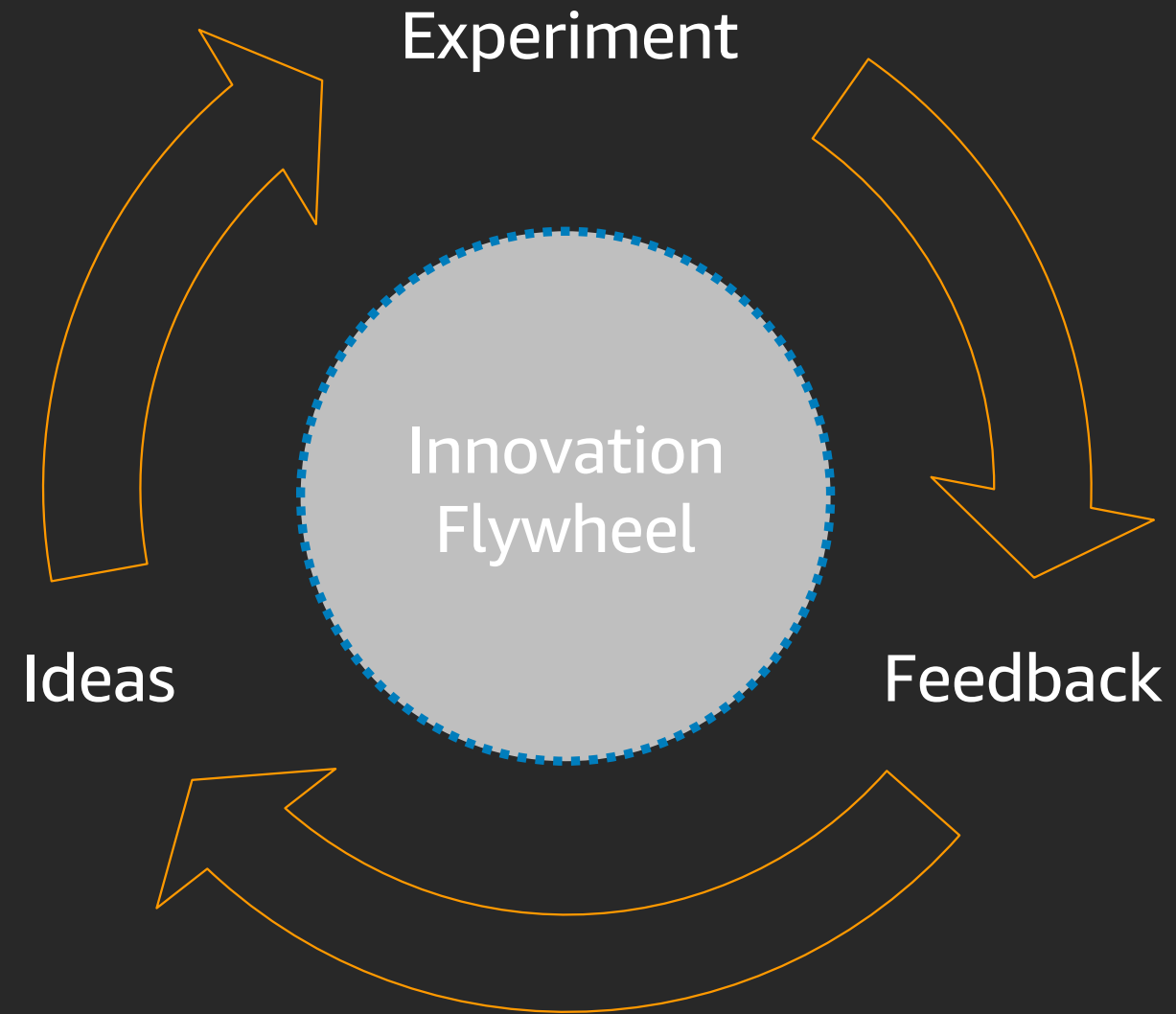
79%

of CIOs believe that digital business is making their IT organizations better prepared to change

67%

of all business leaders believe that they must pick up the pace of digitalization to remain competitive

To maintain competitive advantage, digital businesses must innovate as rapidly as possible.



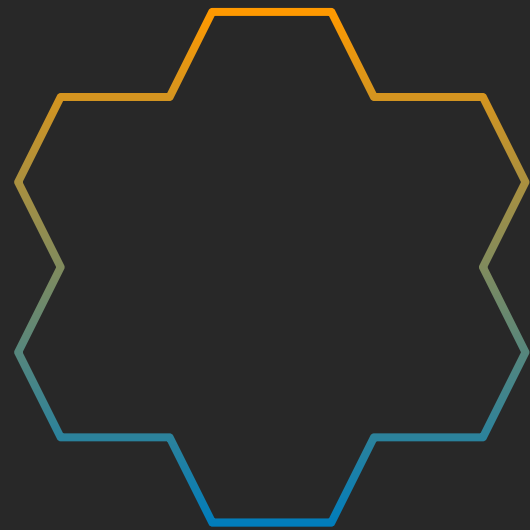
What changes have
to be made
in this new world?

Architectural patterns

Operational model

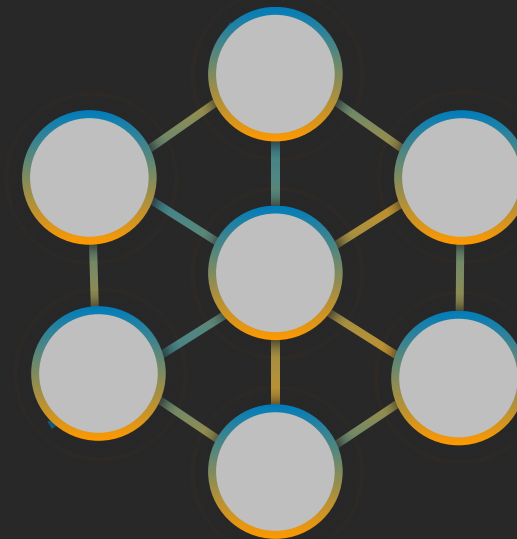
Software delivery

When the impact of change is small,
release velocity can increase.



Monolith

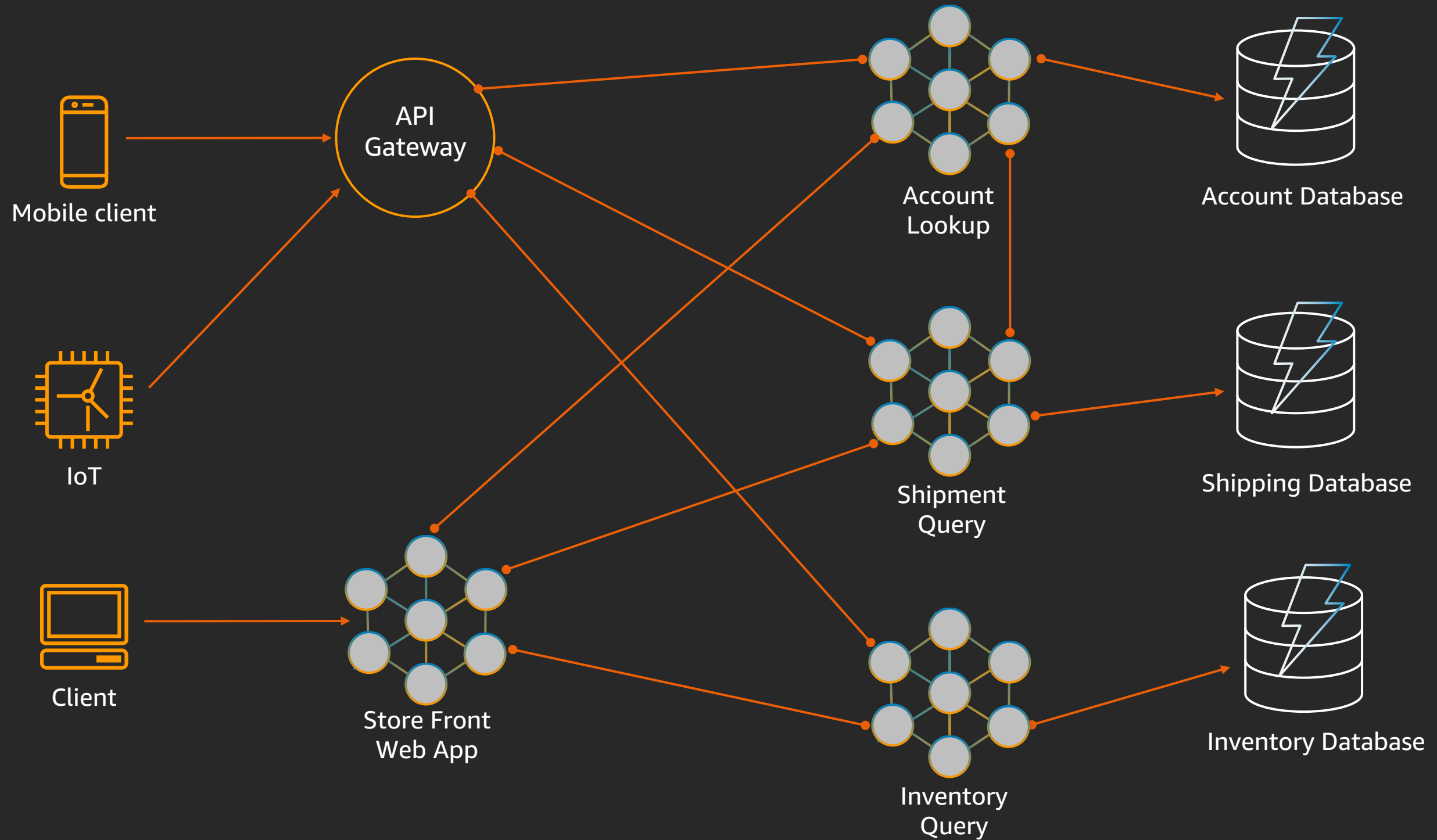
Does everything

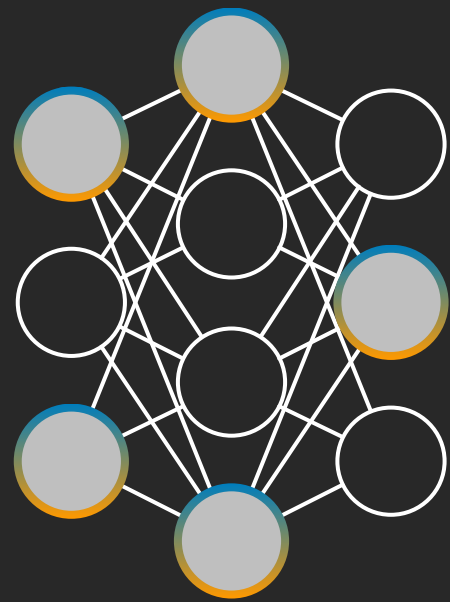


Microservices

Do one thing

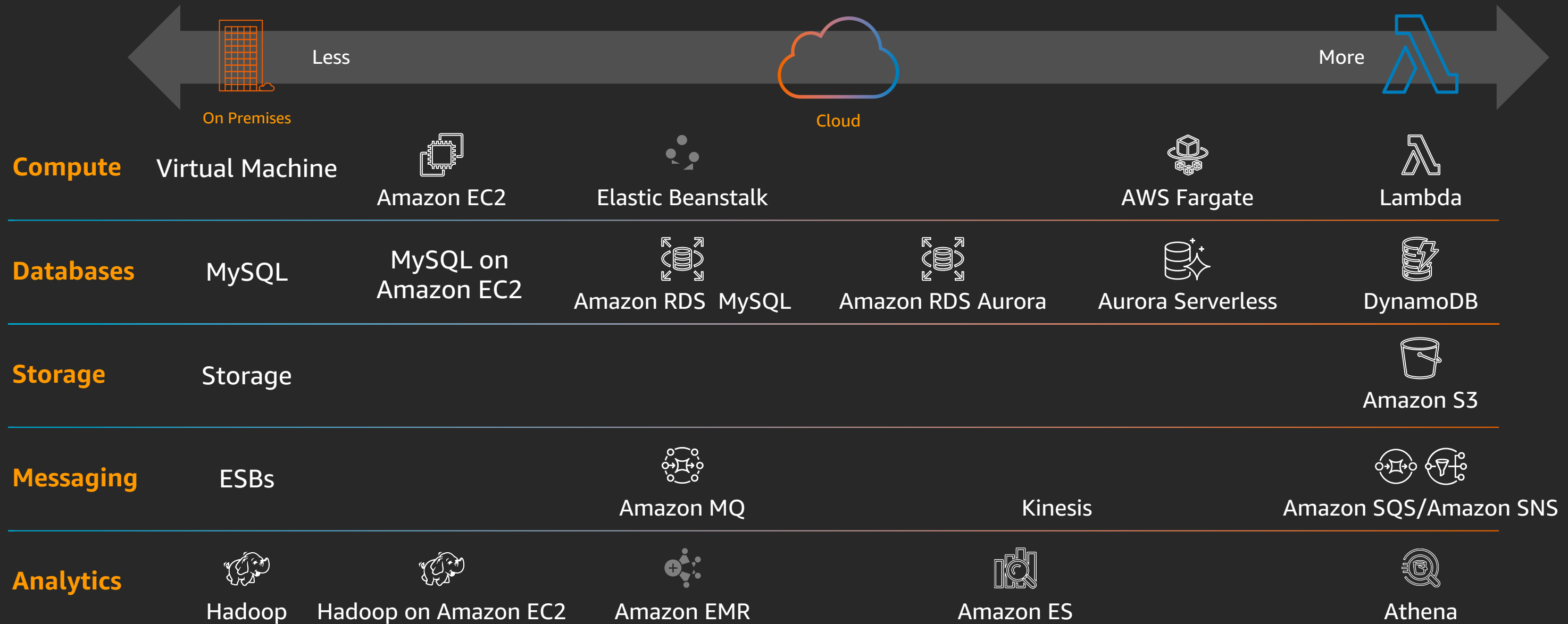
Microservices architectures



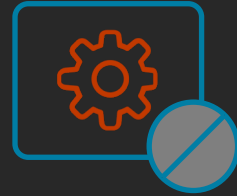


Isn't all of this very hard now that we have lots of pieces to operate?

AWS operational responsibility models



What is serverless?

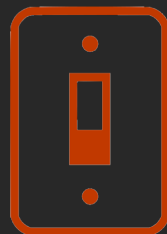


No infrastructure provisioning
or management



Automatic scaling

Pay for value



Highly available and secure



Serverless is an operational model that spans many different categories of services.

COMPUTE

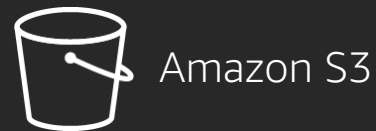


Lambda

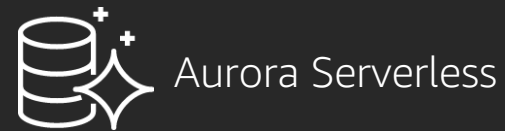


AWS
Fargate

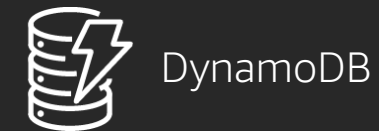
DATA STORES



Amazon S3



Aurora Serverless



DynamoDB

INTEGRATION



API Gateway



Amazon
SQS



Amazon
SNS



Step Functions



AWS AppSync



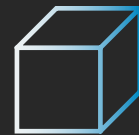
How do I develop and deploy code in a serverless microservices architecture?

Microservice development lifecycle

Developers



Services



Delivery Pipelines

build

test

release

monitor

build

test

release

monitor

build

test

release

monitor

build

test

release

monitor

build

test

release

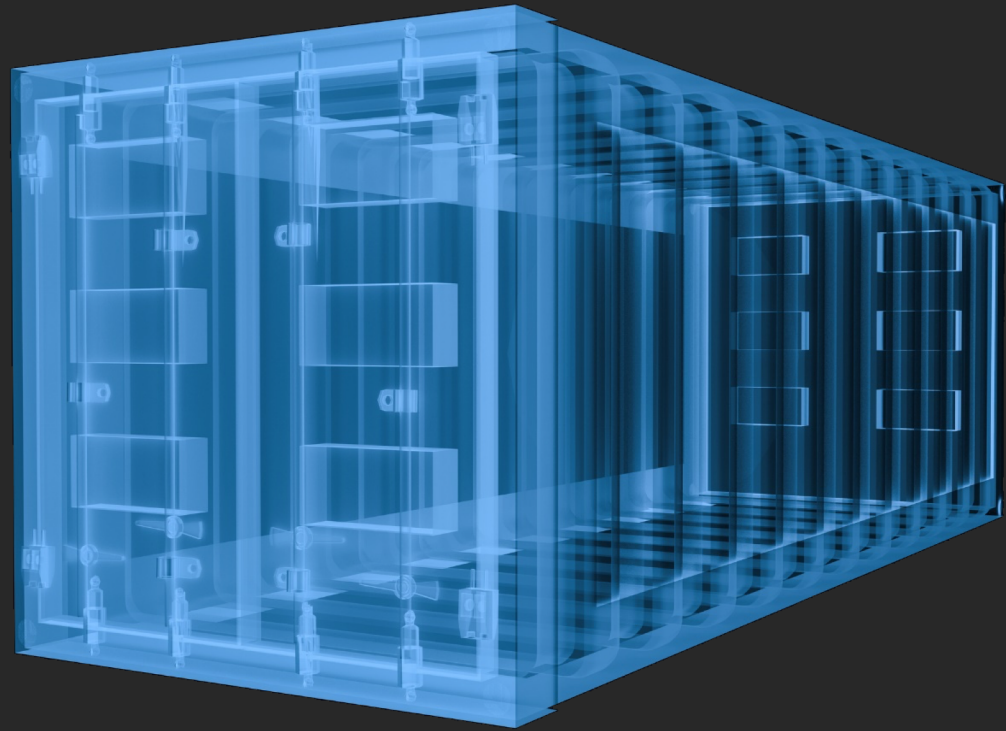
monitor

build

test

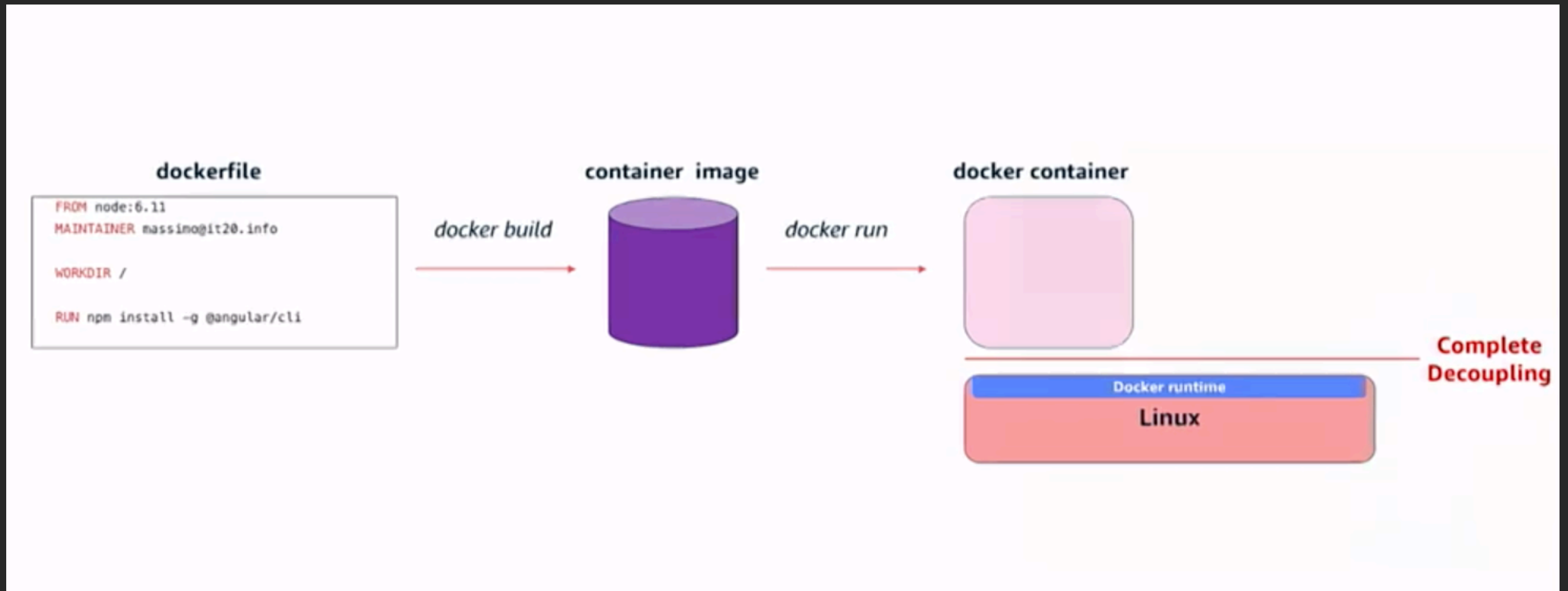
release

monitor



Containers are the best on ramp towards modern applications.

We all know what docker is, don't we?



Yeah. Thank you, next.

Make AWS the best place to run containers

AWS container services landscape

Management

Deployment, scheduling, scaling, and management of containerized applications



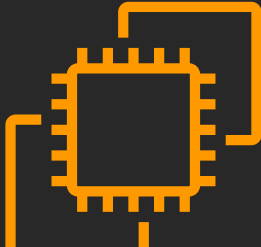
Amazon ECS



Amazon ECS for Kubernetes

Hosting

Where the containers run



Amazon EC2



AWS Fargate

Image Registry

Container image repository



Amazon ECR



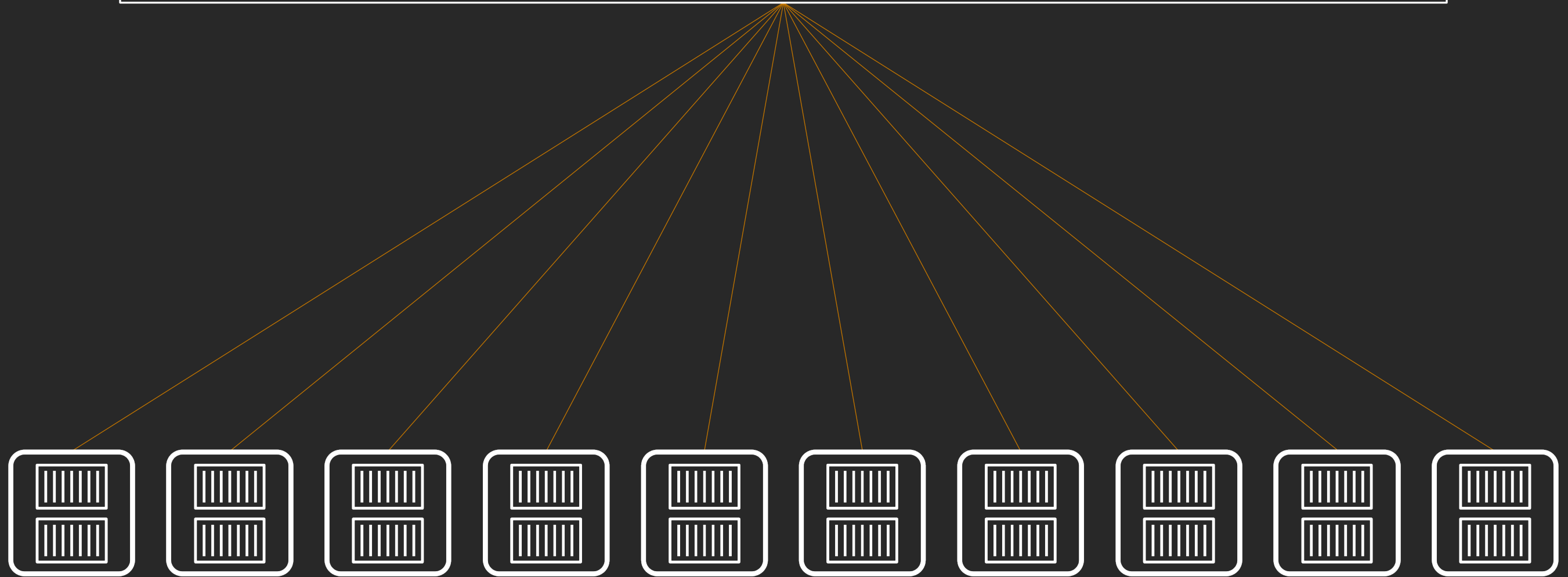
Amazon ECS



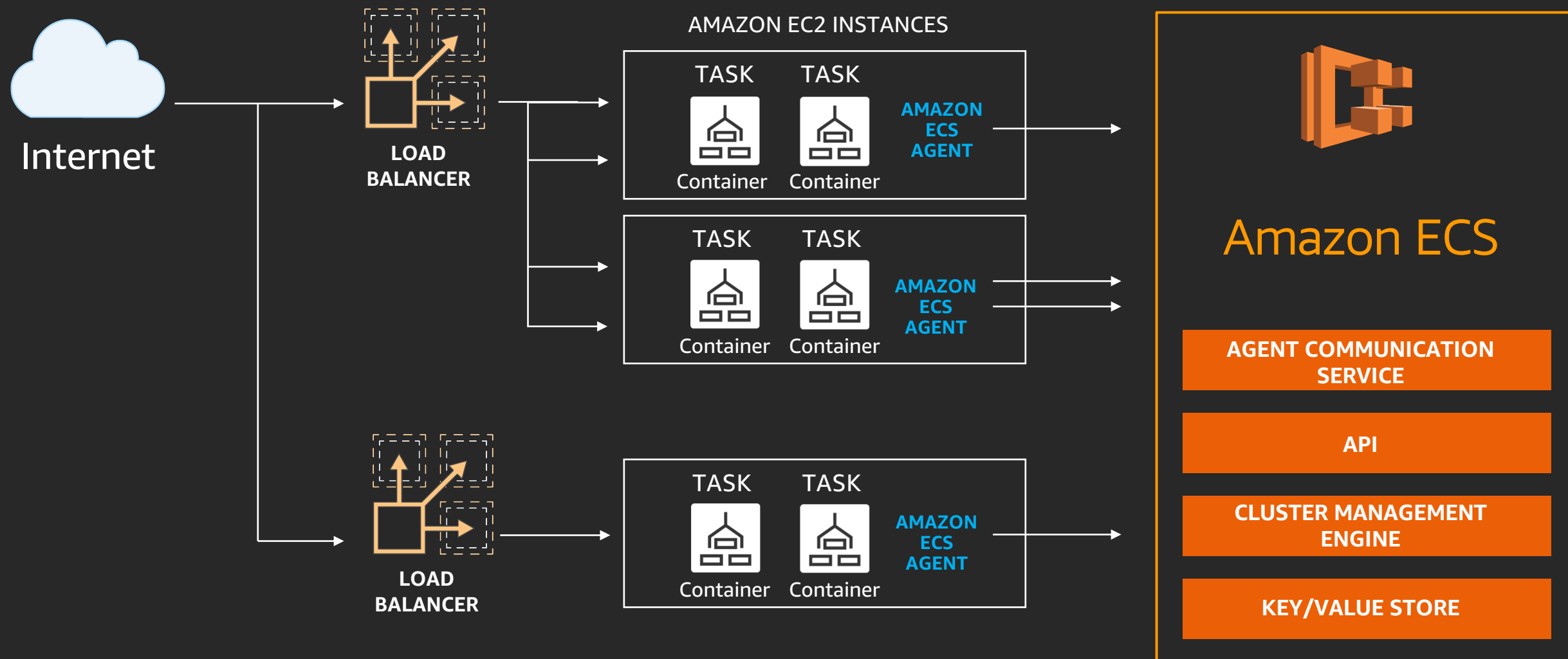
Scheduling and Orchestration

Cluster Manager

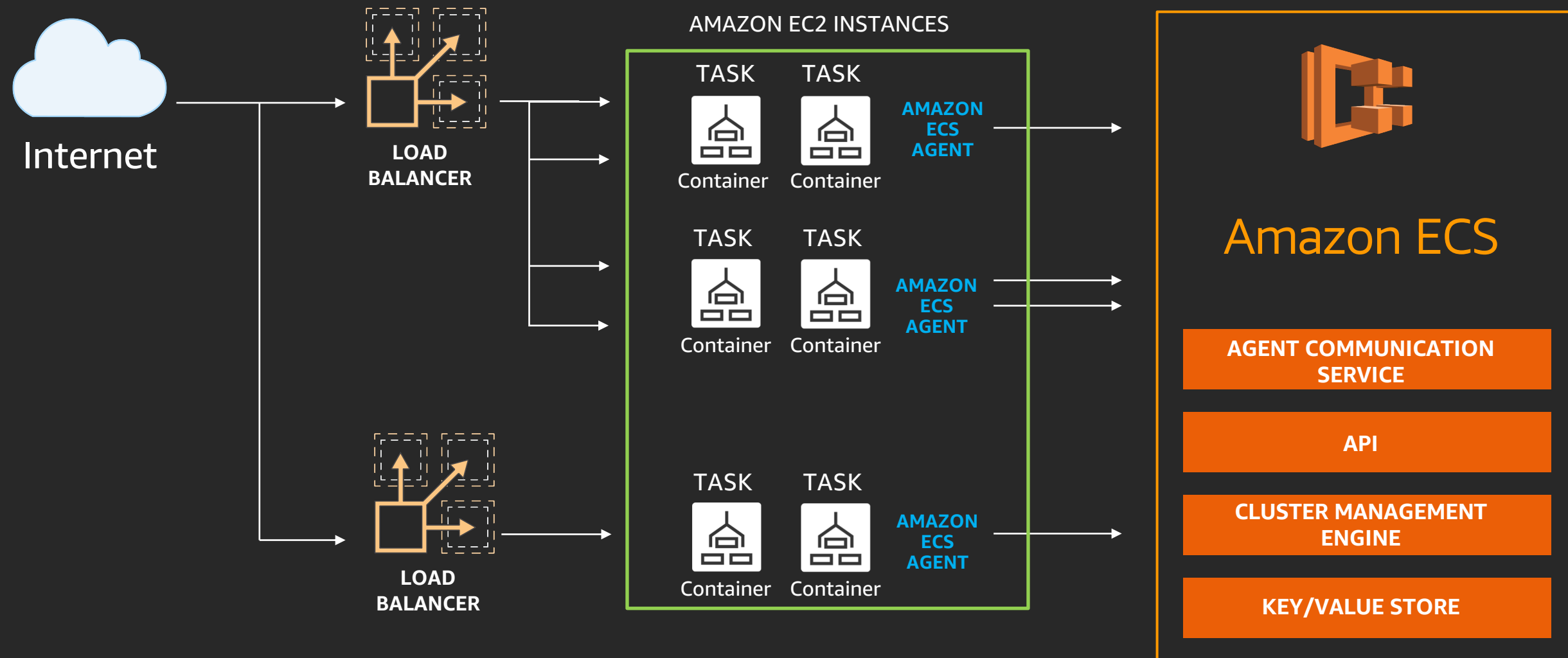
Placement Engine



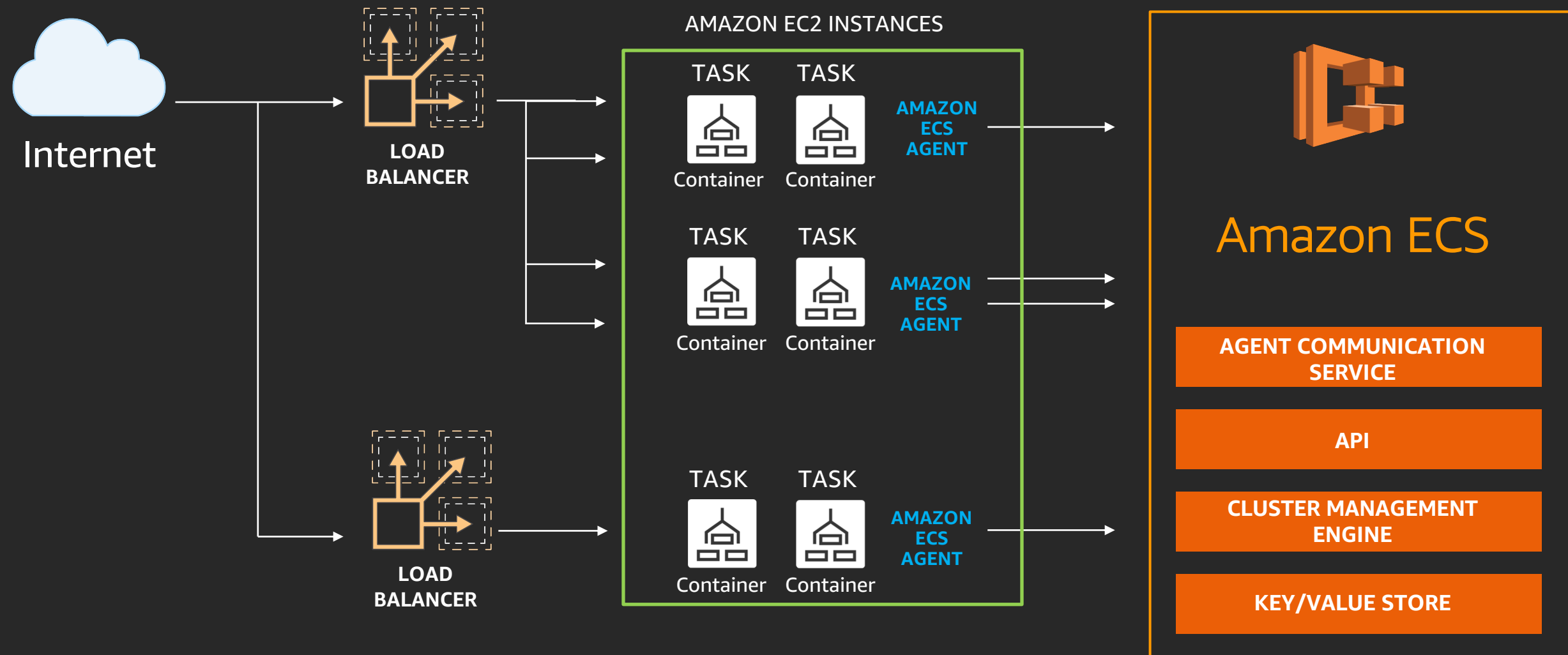
Amazon ECS



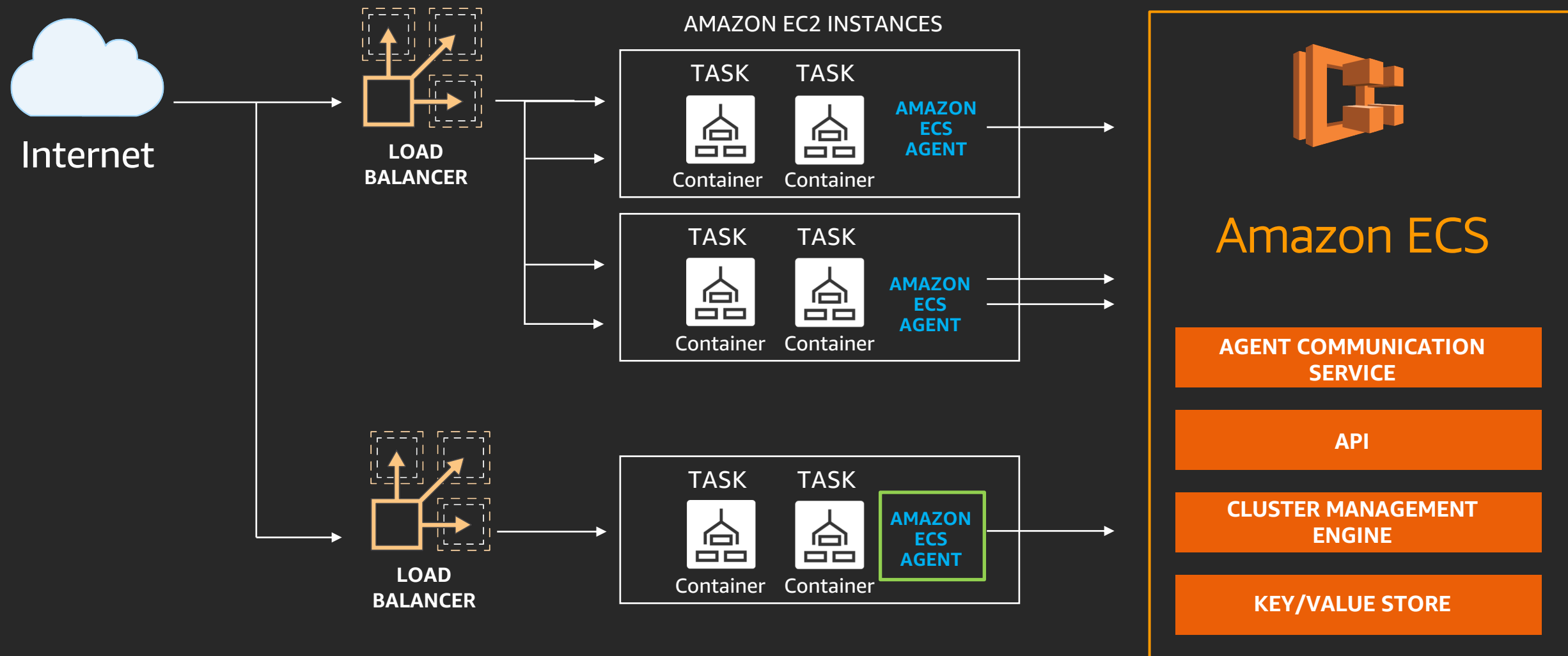
Cluster of hosts on Amazon EC2



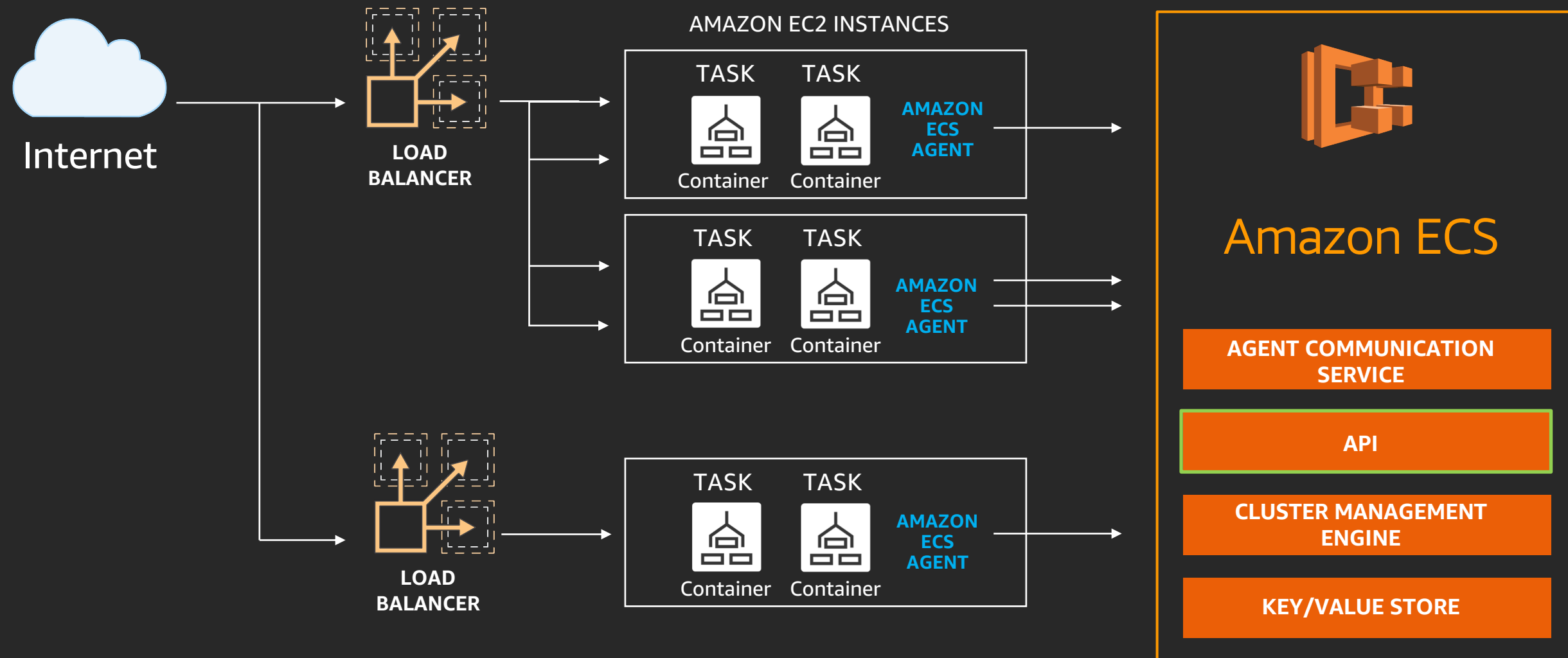
Lightweight agent on each host



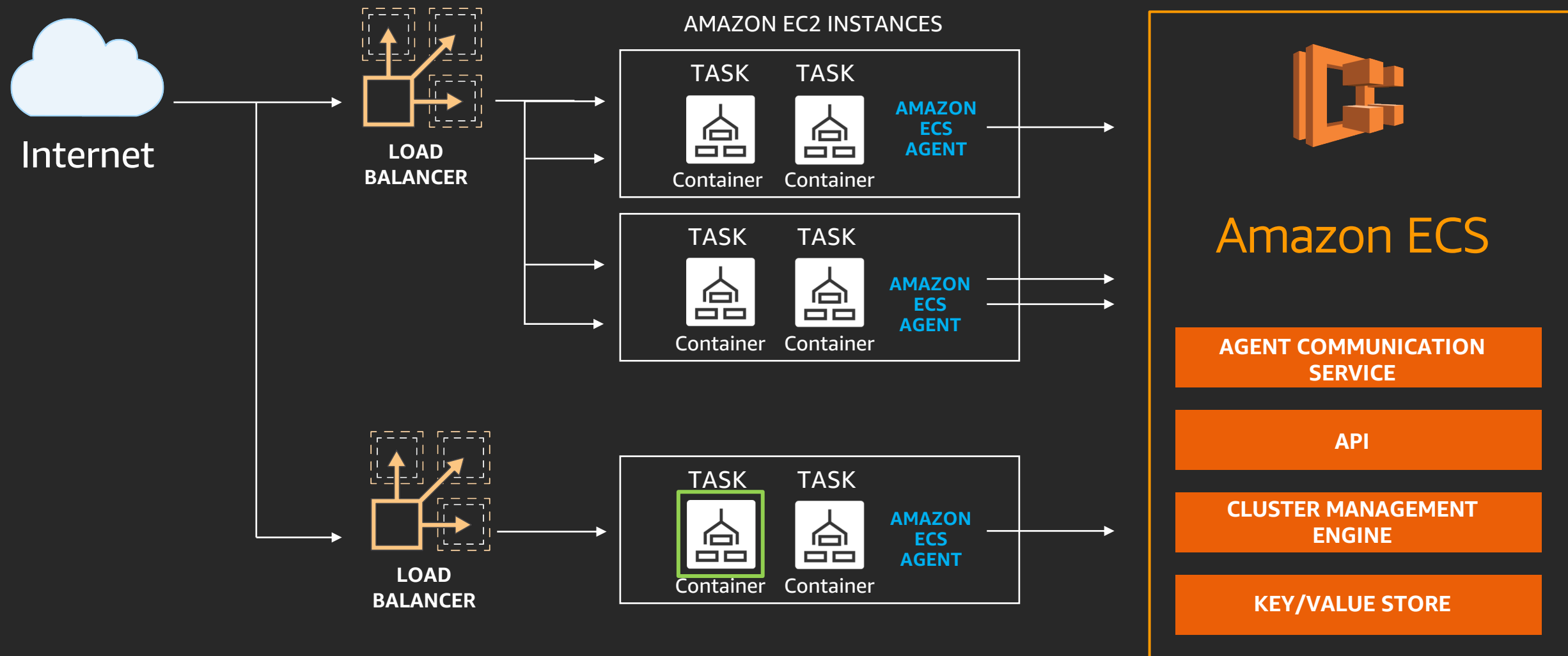
Lightweight agent on each host



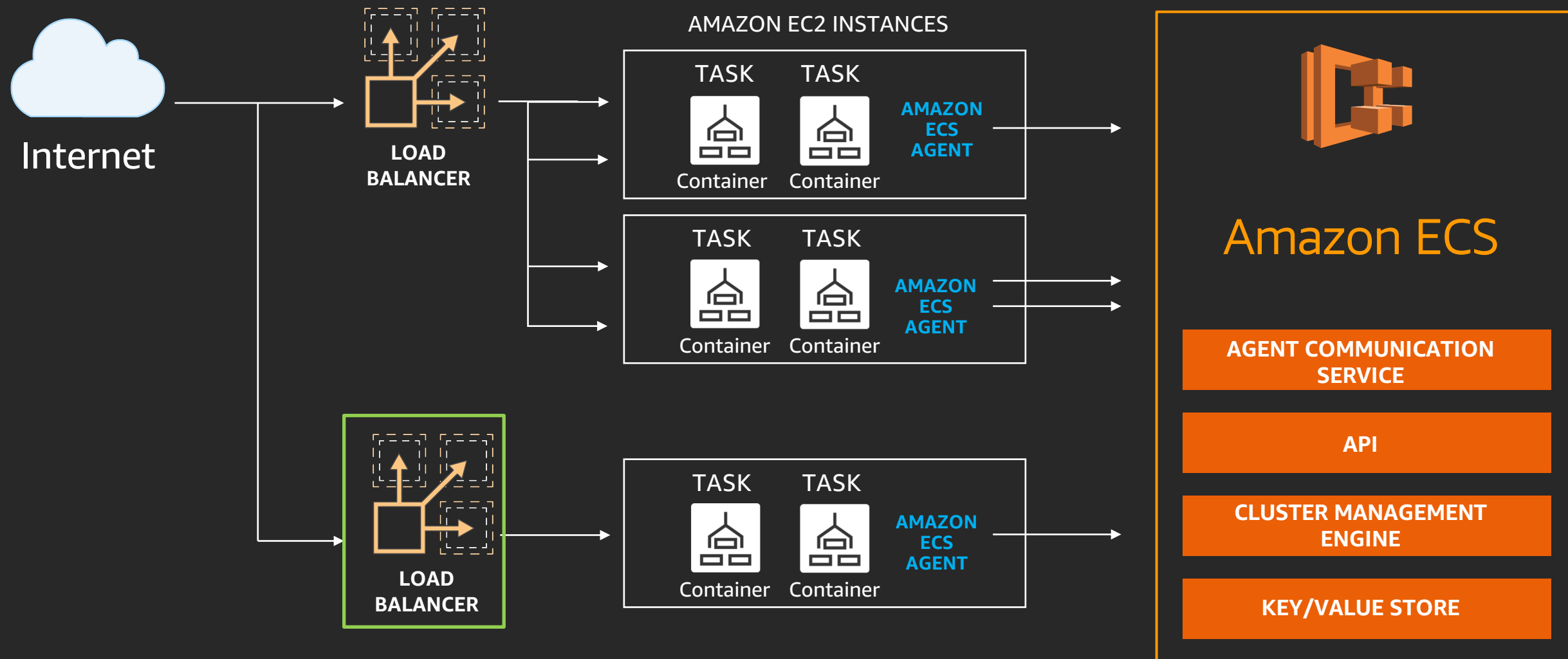
API for launching containers on the cluster



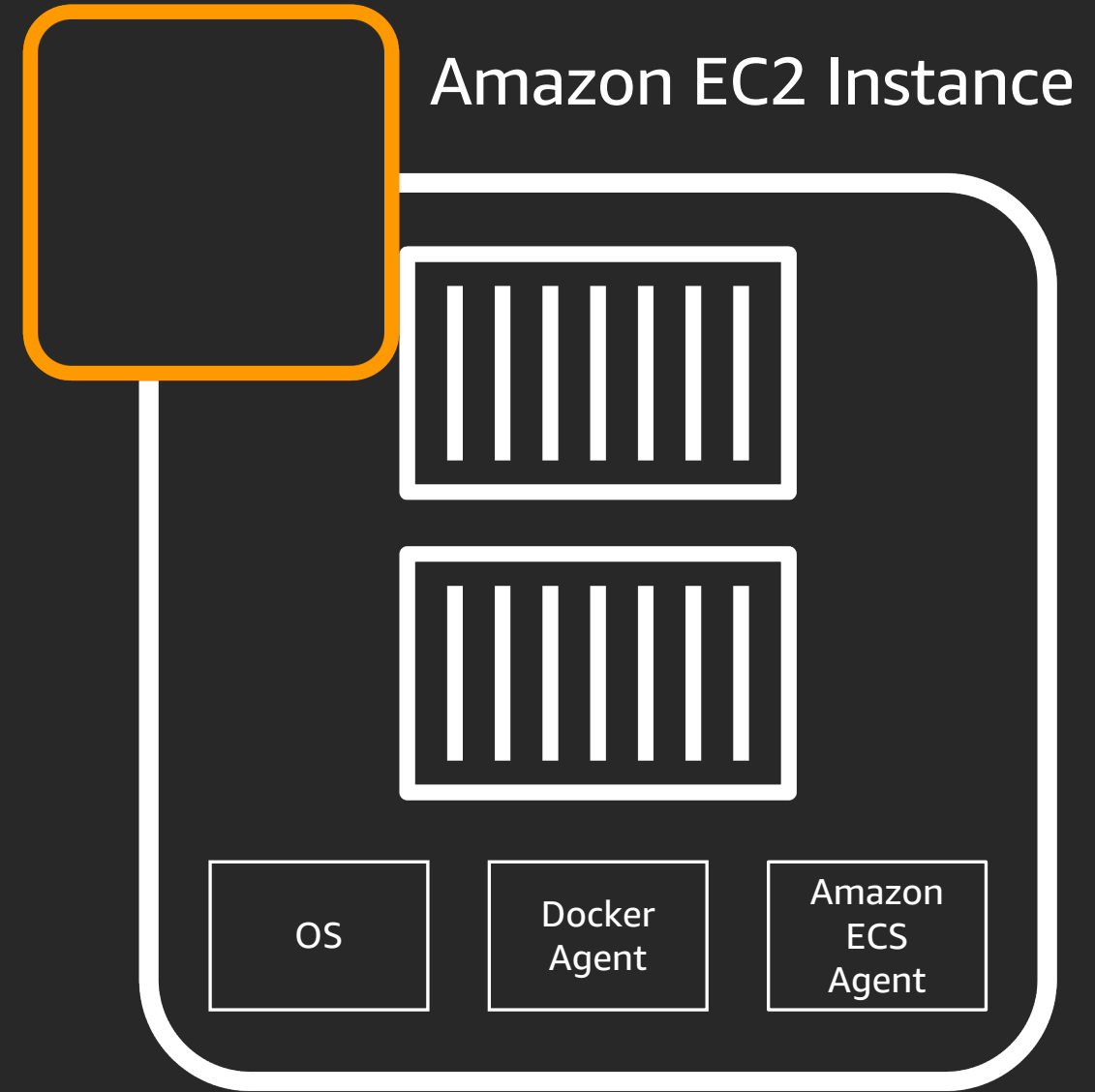
Container task is placed on a host



Traffic is sent to your host



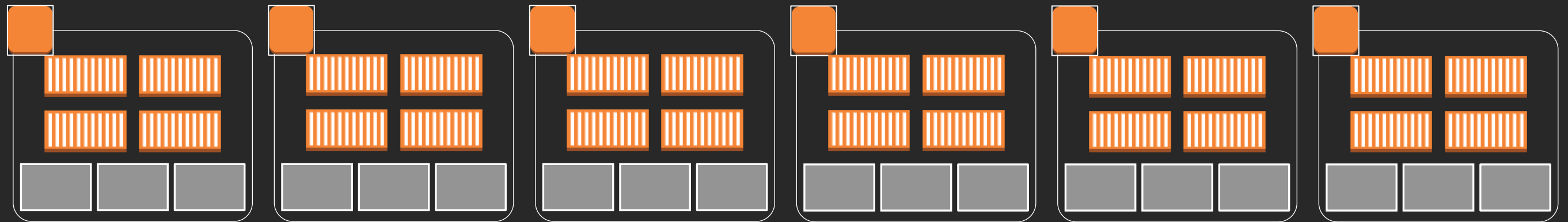
You end up managing more than just containers.



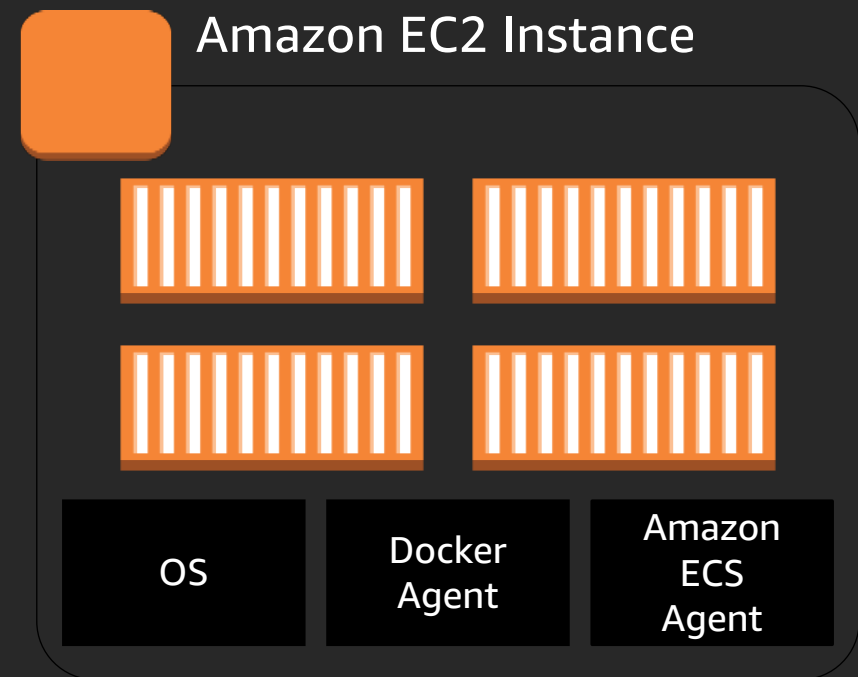
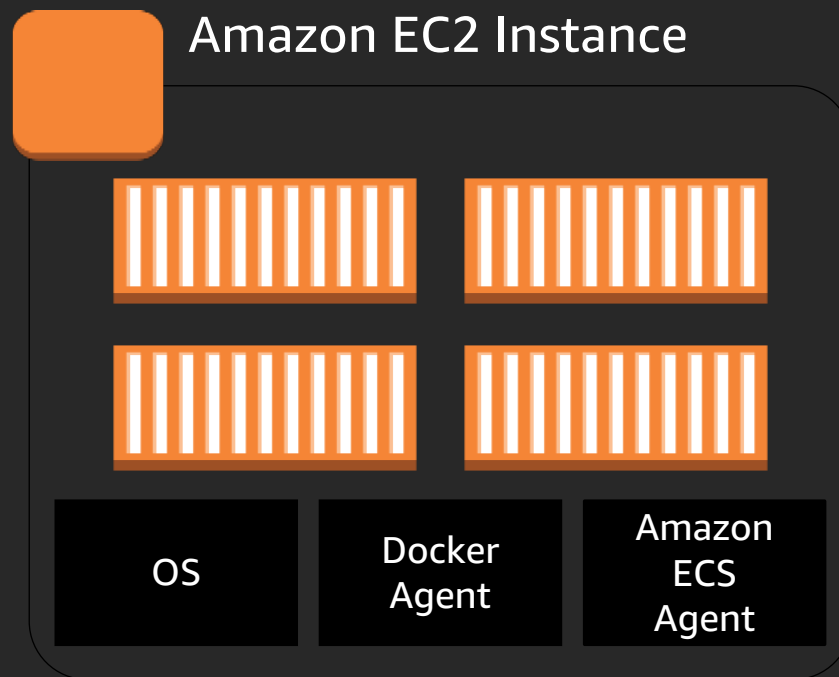
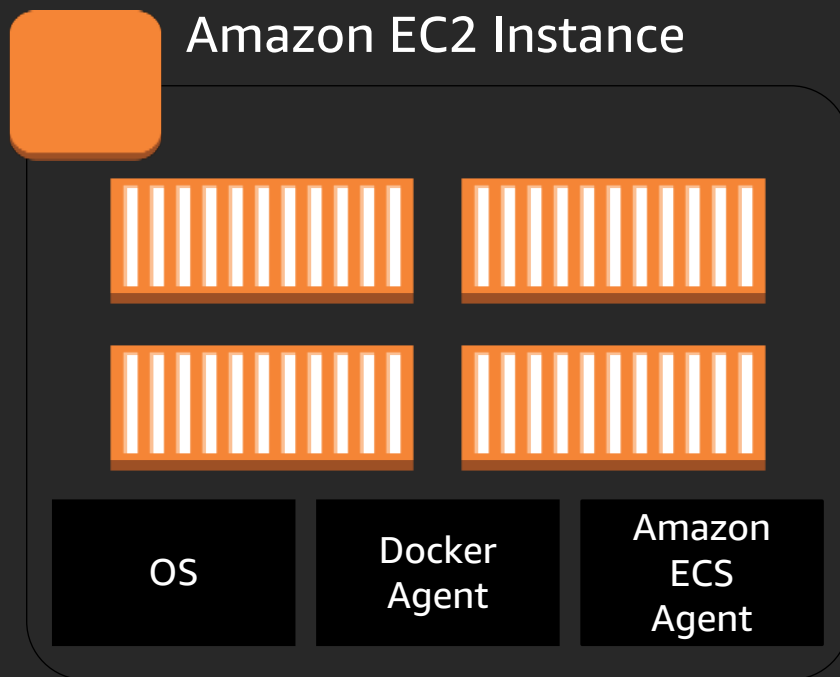
Managing instance fleets is hard work, too

Patching and Upgrading OS, agents, etc.

Scaling the instance fleet for optimal utilization



Customers wanted to run containers without having to manage Amazon EC2 instances



AWS Fargate



**Your containerized
applications**

Serverless

No Amazon EC2 Instances to provision, scale, or manage

Elastic

Scale up and down seamlessly
Pay only for what you use

Integrated

with AWS: Amazon VPC Networking, Elastic Load Balancing, IAM permissions, CloudWatch, and more

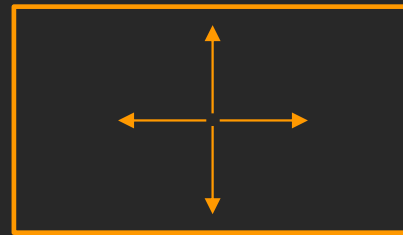
Amazon ECS/Amazon EC2 vs. Amazon ECS/AWS Fargate

	Amazon EC2	AWS Fargate
Managed by	Customer	AWS
Storage	Ephemeral or persistent	Only ephemeral
Sidecar pattern	Yes	Yes
Network mode	Bridge or VPC mode	VPC mode
Daemons	Yes	No
SSH into host	Yes	No
Privileged containers	Yes	No

What is Kubernetes?



Open source container management platform



Helps you run containers at scale



Gives you primitives for building modern applications

Community, contribution, choice



**CLOUD NATIVE
COMPUTING FOUNDATION**



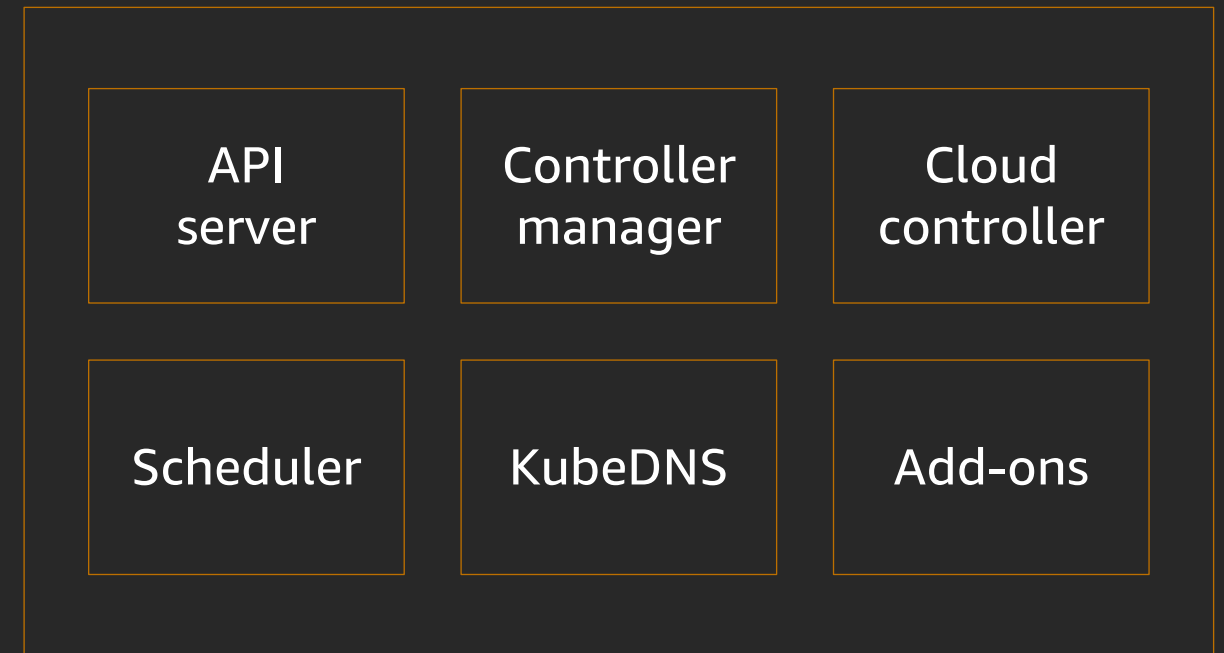
kubernetes

Kubernetes on AWS



3x Kubernetes masters for HA

Kubernetes master





Master



Etcd

Availability
Zone 1



Master



Etcd

Availability
Zone 2



Master



Etcd

Availability
Zone 3



Master

Master

Master

Etcd

Etcd

Etcd

Availability
Zone 1

Availability
Zone 2

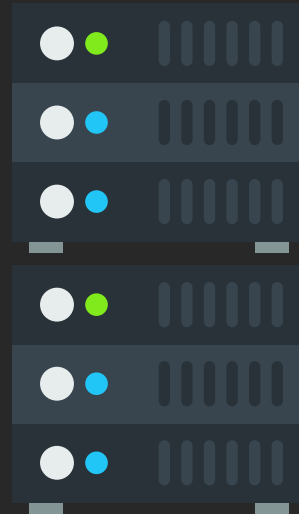
Availability
Zone 3

There are a variety of different ways to run Kubernetes.

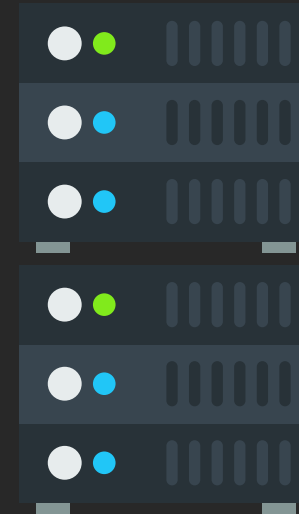
How much do you want to manage?



Your
container



Worker
nodes



Masters

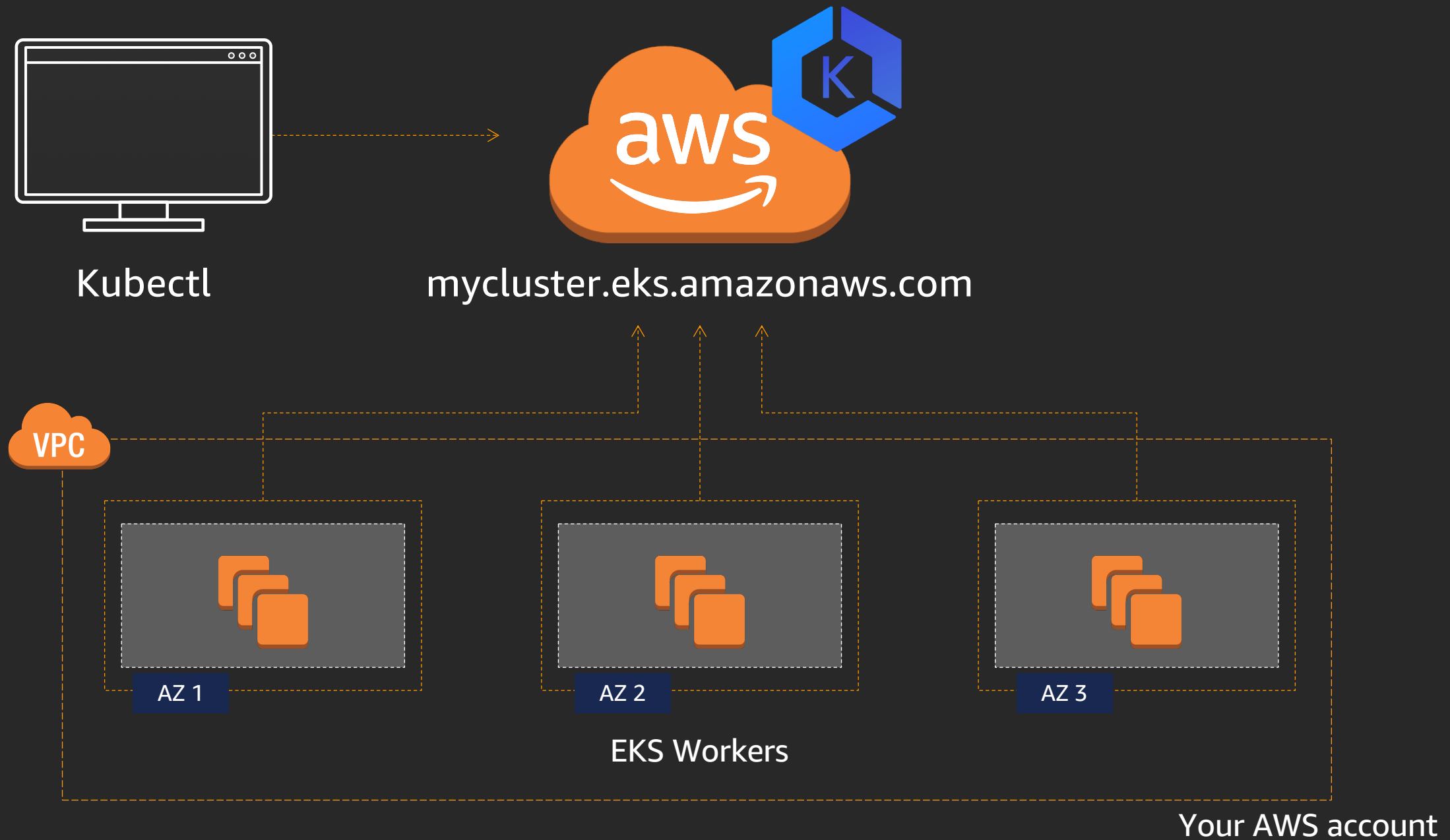


State
store



Amazon EKS

Amazon EKS

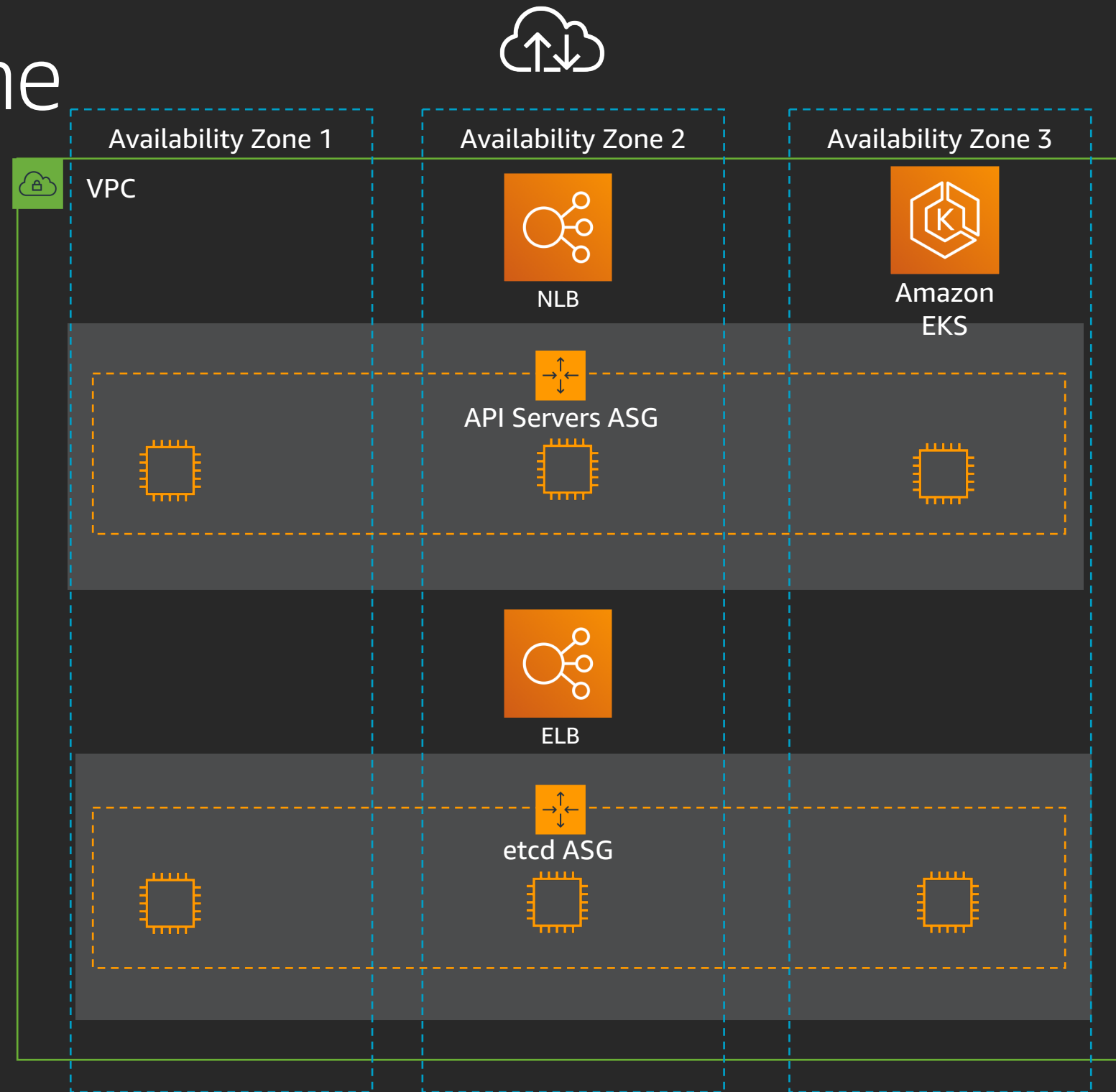


Amazon EKS control plane

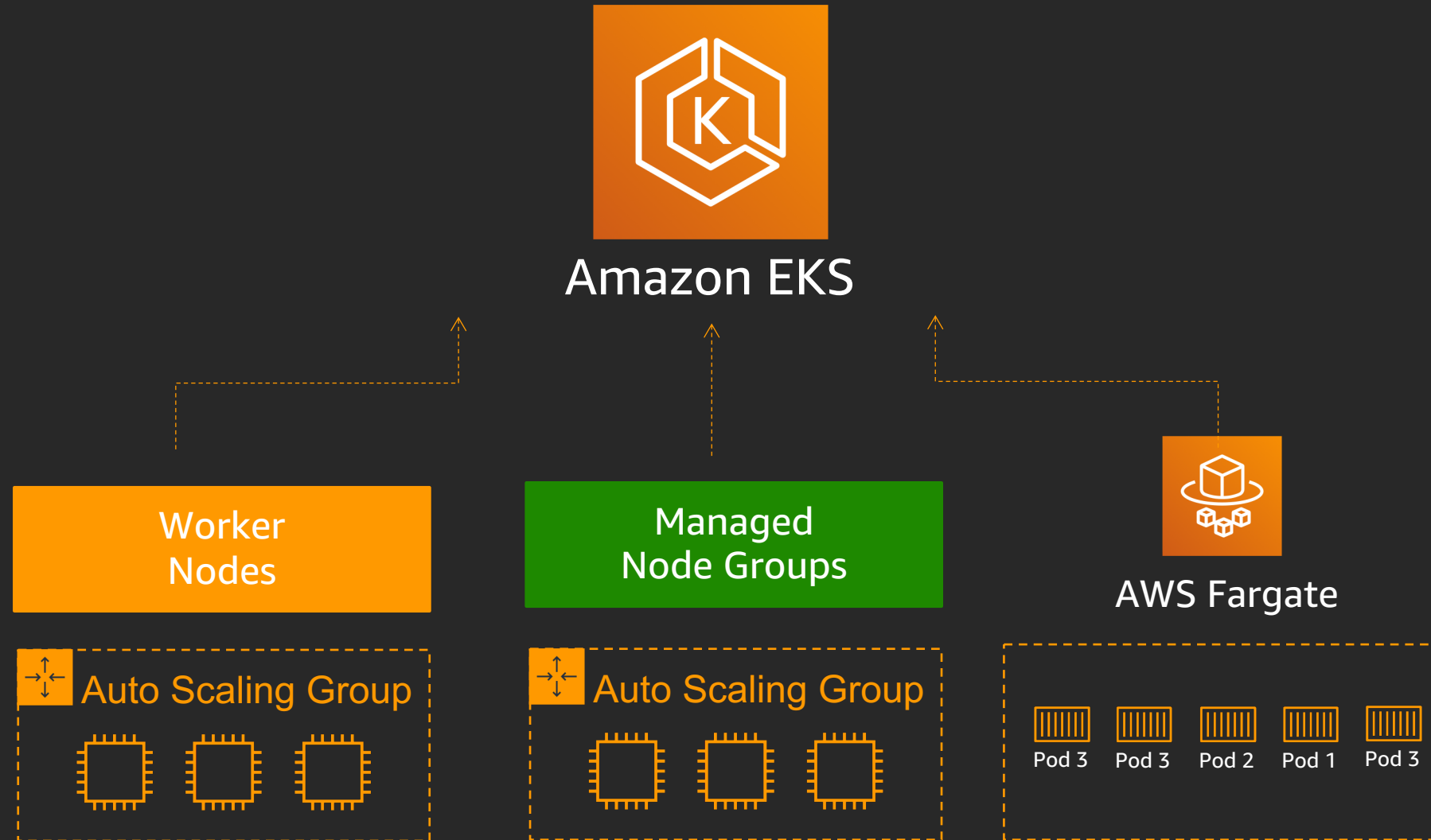
Highly available and single tenant infrastructure

All "native AWS" components

Fronted by an NLB



Amazon EKS data plane options



AWS Fargate vs. (un)managed nodes

	Fargate	Managed nodes	Unmanaged nodes
Units of work	Pod	Pod and Amazon EC2	Pod and Amazon EC2
Unit of charge	Pod	Amazon EC2	Amazon EC2
Host lifecycle	There is no visible host	AWS (SSH is allowed)	Customer
Host AMI	There is no visible host	AWS vetted AMIs	Customer BYO
Host: Pods	1:1	1:many	1:many

Thank you!



Please complete the session survey in the mobile app.