



INNOVATE2018

ONLINE CONFERENCE



Run Containers without Managing Servers or Clusters with AWS Fargate (Level 300)

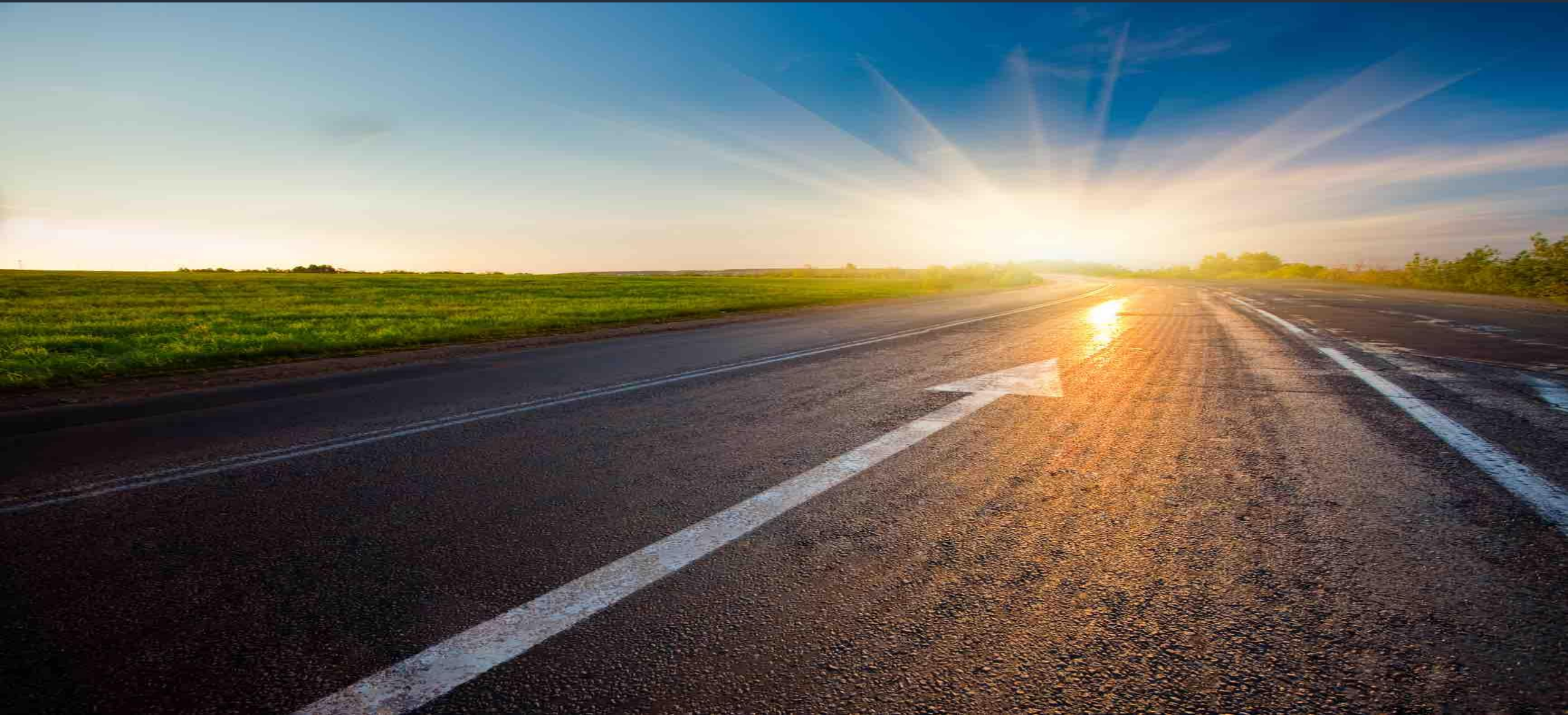
Santanu Dutt, Senior Manager, Solution Architect

Santanu Dutt

 @san_dutt

Solutions Architecture
@Amazon Web Services

OUR JOURNEY!



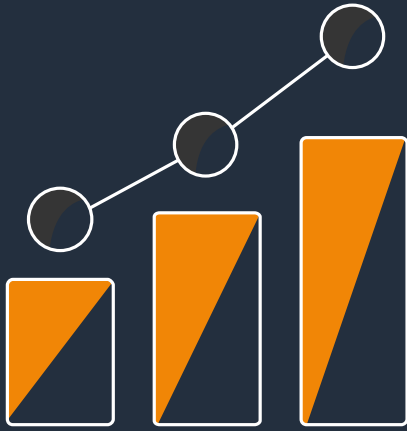
DAY ONE!



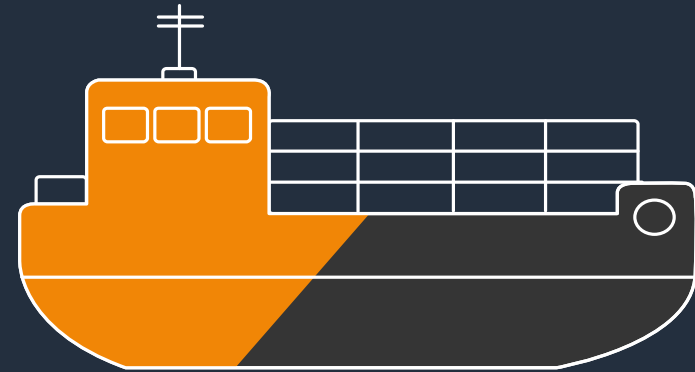
BUILDING AN ECOSYSTEM



HELPING CUSTOMERS SCALE CONTAINERS

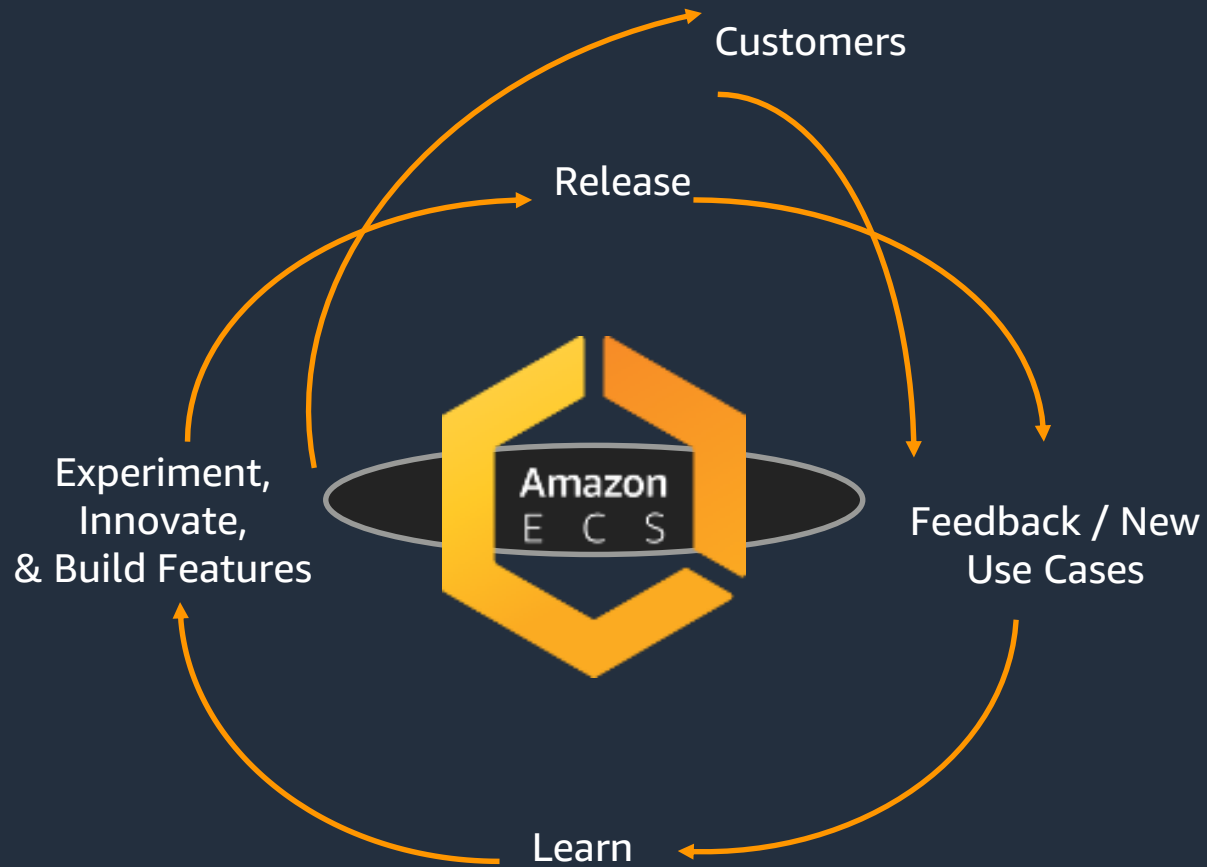


450+%
growth



Hundreds of millions
of containers started each week
millions
of container instances

CUSTOMERS ARE OUR KEY!



50+
releases
since 2015

ENABLE FOCUS ON APPLICATIONS



Make
~~containers~~
tasks a
fundamental
compute
primitive



INTRODUCING FARGATE!



CHANGING COMPUTE CONSUMPTION MODEL



No instances
to manage

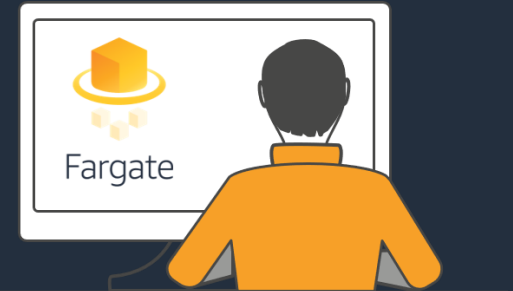


Task
native API



Resource
based pricing

=



Simple, easy to use,
powerful – and new
consumption model

PRODUCTION WORKLOADS ON AWS



Fargate



AWS VPC
networking mode



Advanced task
placement



Deep integration
with AWS platform



ECS CLI



Global footprint



Powerful scheduling
engines



Auto scaling



CloudWatch metrics



Load balancers



63%

of Kubernetes workload run on
Amazon Web Services today

- CNCF 2017 Survey



<https://www.cncf.io/blog/2017/06/28/survey-shows-kubernetes-leading-orchestration-platform/>
<https://www.cncf.io/blog/2017/12/06/cloud-native-technologies-scaling-production-applications/>

EKS SUPPORT FOR FARGATE IN 2018



FARGATE: UNDER THE HOOD

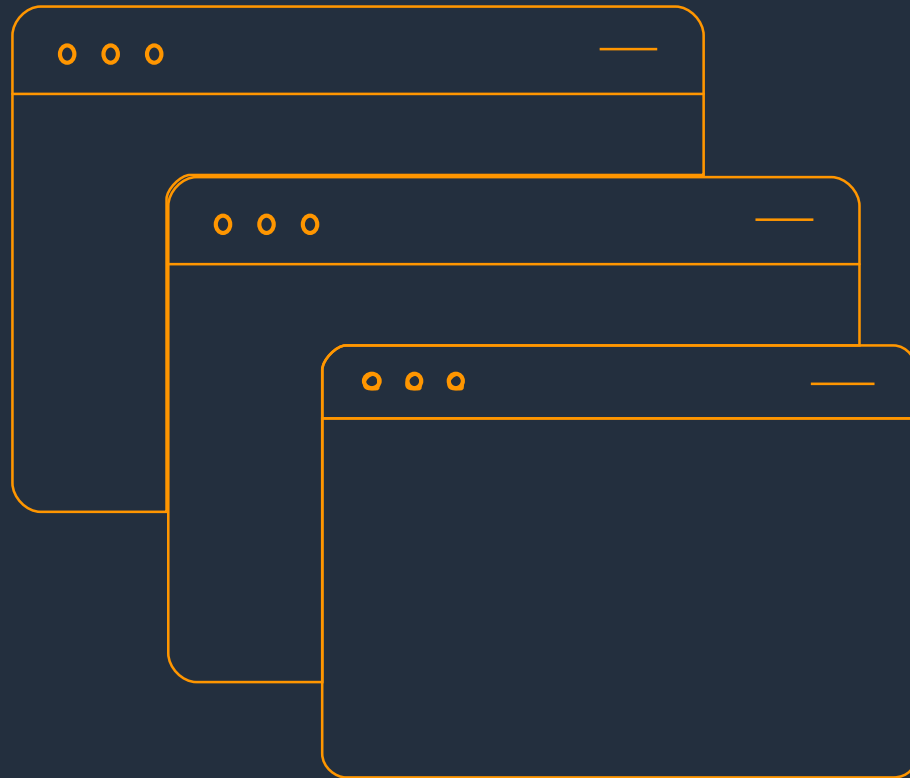


FARGATE USE CASES

MICROSERVICES



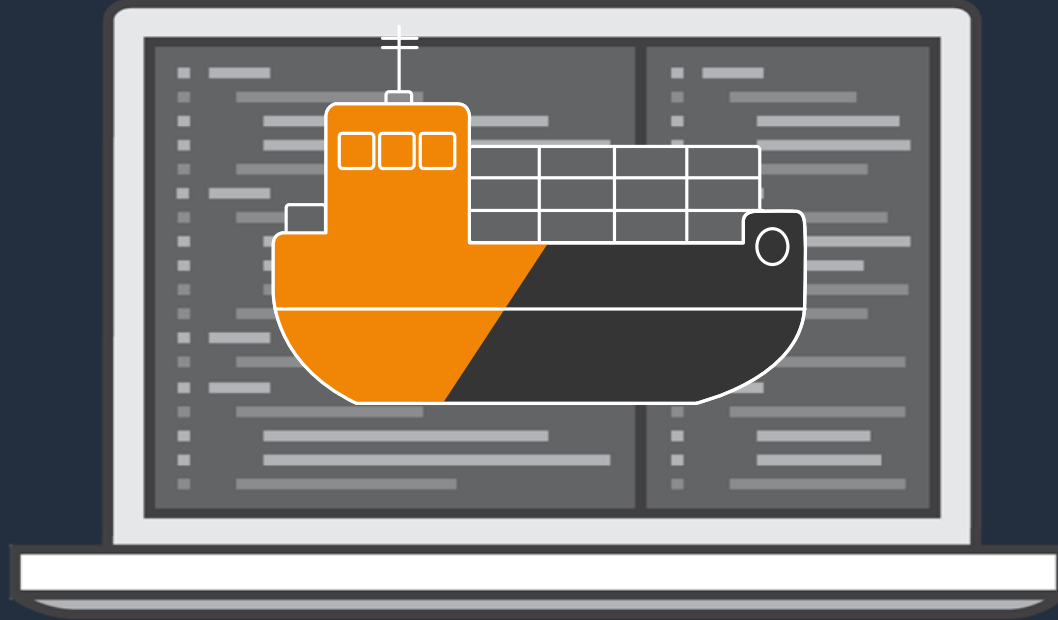
BATCH JOBS



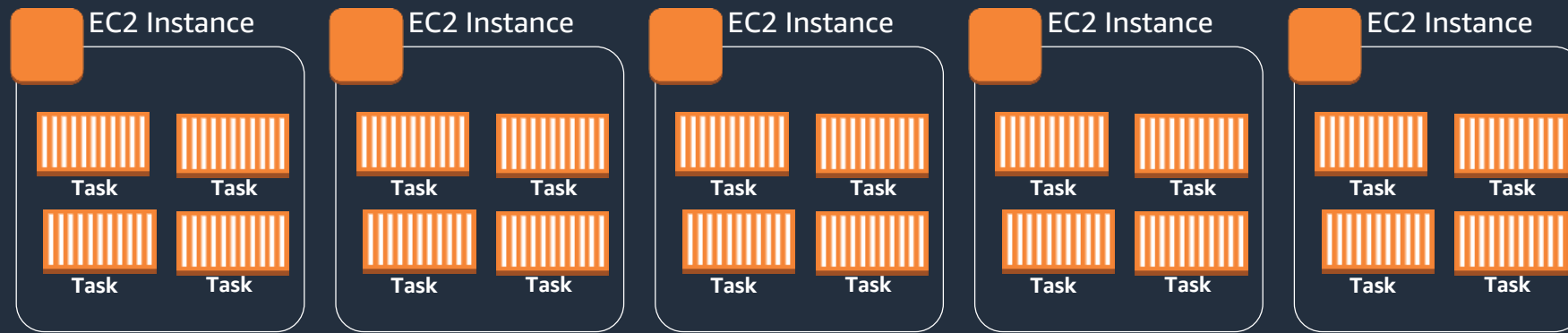
MIGRATION TO THE CLOUD



RUNNING CONTAINER



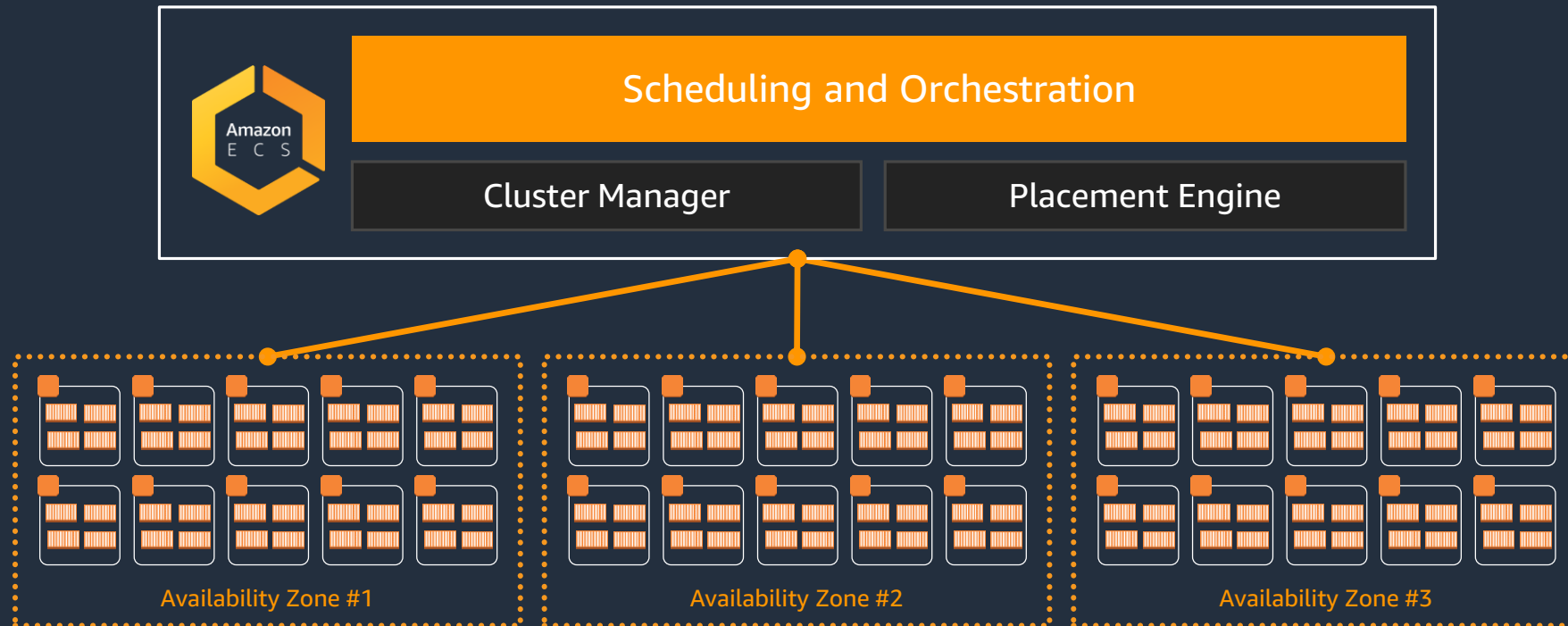
RUNNING CONTAINERS



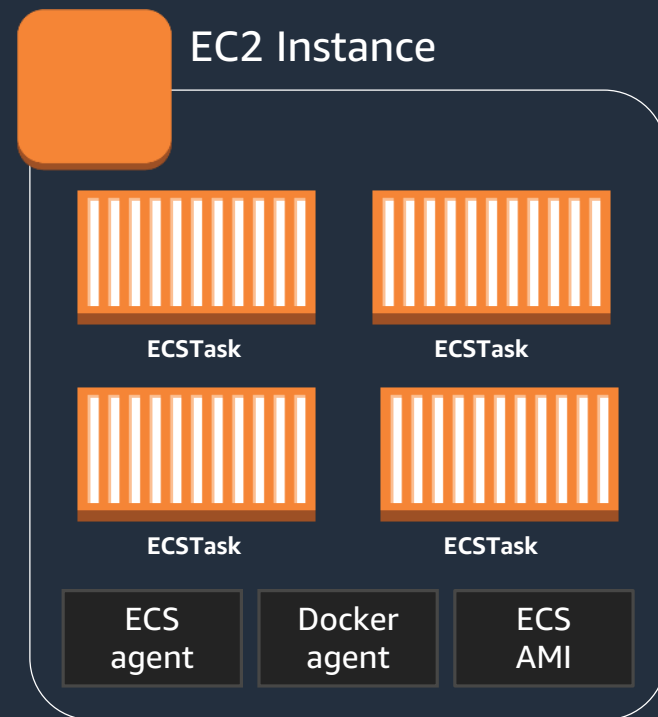
RUNNING CONTAINERS AT SCALE WITH ECS

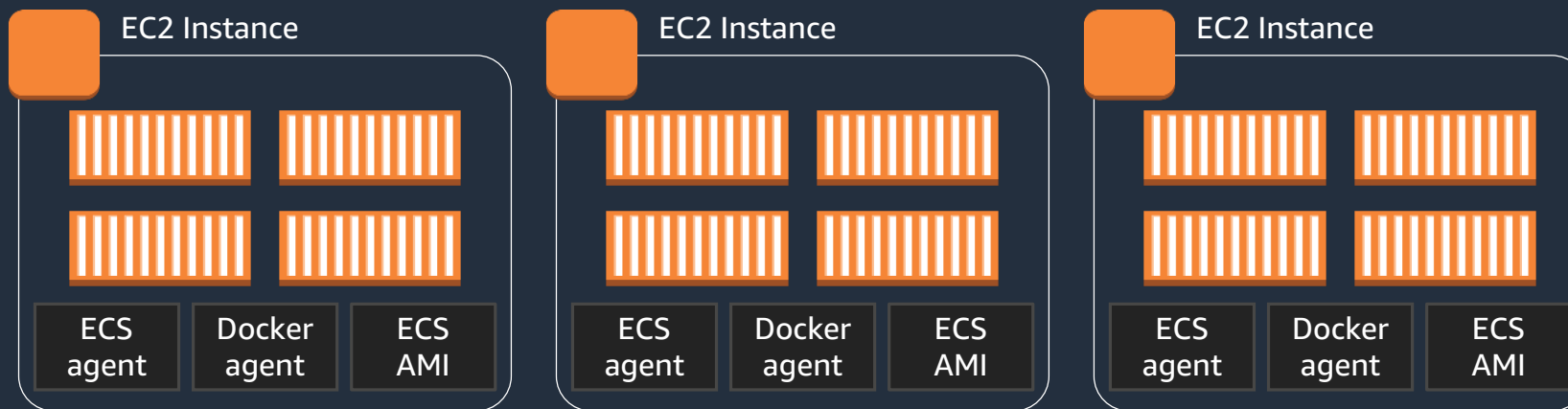


RUNNING CONTAINERS AT SCALE WITH ECS











Scheduling and Orchestration

Cluster Manager

Placement Engine



EC2 Instance



ECS
agent

Docker
agent

ECS
AMI



EC2 Instance



ECS
agent

Docker
agent

ECS
AMI



EC2 Instance



ECS
agent

Docker
agent

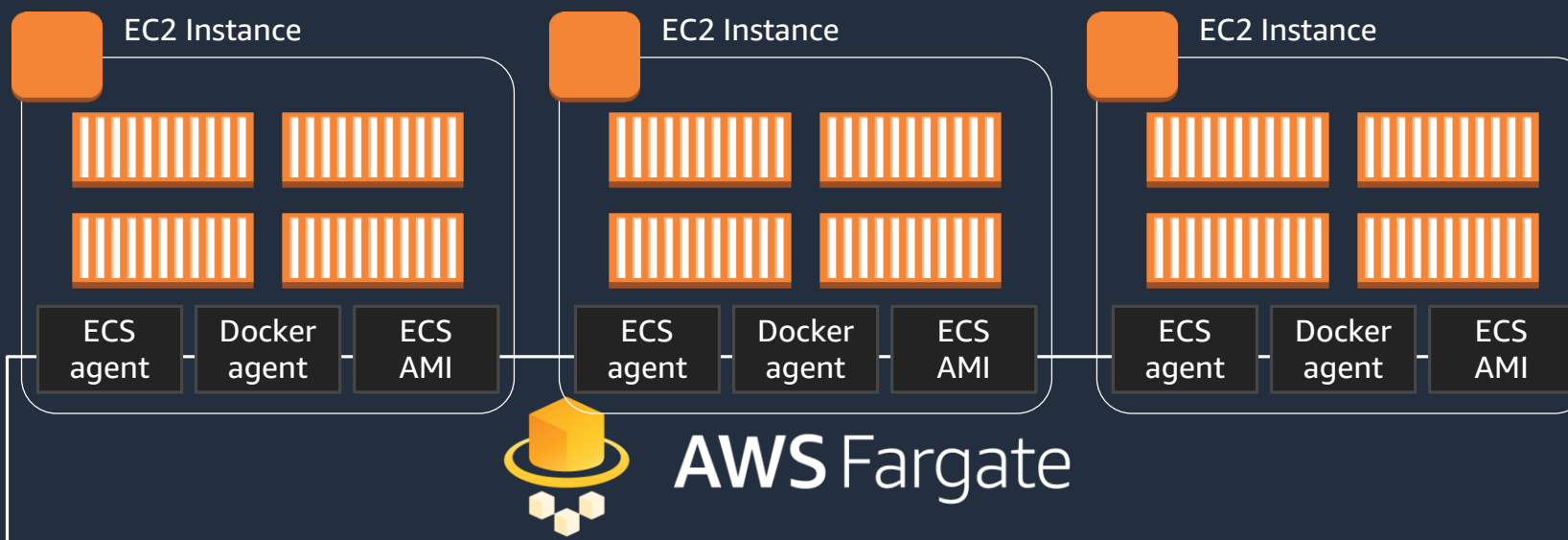
ECS
AMI



Scheduling and Orchestration

Cluster Manager

Placement Engine



RUNNING FARGATE CONTAINERS WITH ECS

Create new Task Definition

Step 1: Select launch type compatibility

Step 2: Configure task and container definitions

Select launch type compatibility

Select which launch type you want your task definition to be compatible with based on where you want to launch your task.

FARGATE



Price based on task size

Requires network mode awsvpc

AWS-managed infrastructure, no Amazon EC2 instances to manage

EC2



Price based on resource usage

Multiple network modes available

Self-managed infrastructure using Amazon EC2 instances

RUNNING FARGATE CONTAINERS WITH ECS



Same *Task Definition* schema



Use ECS APIs to launch Fargate Containers



Easy migration – Run *Fargate* and *EC2* launch type tasks in the same cluster

Demo Time!

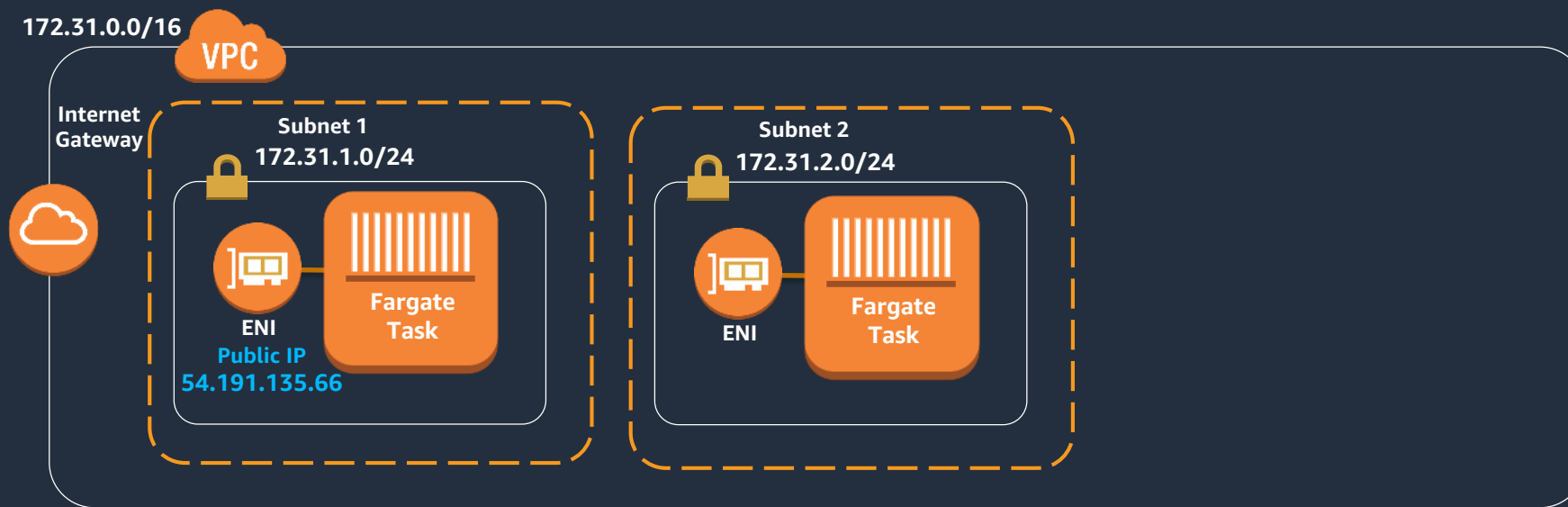
NETWORKING



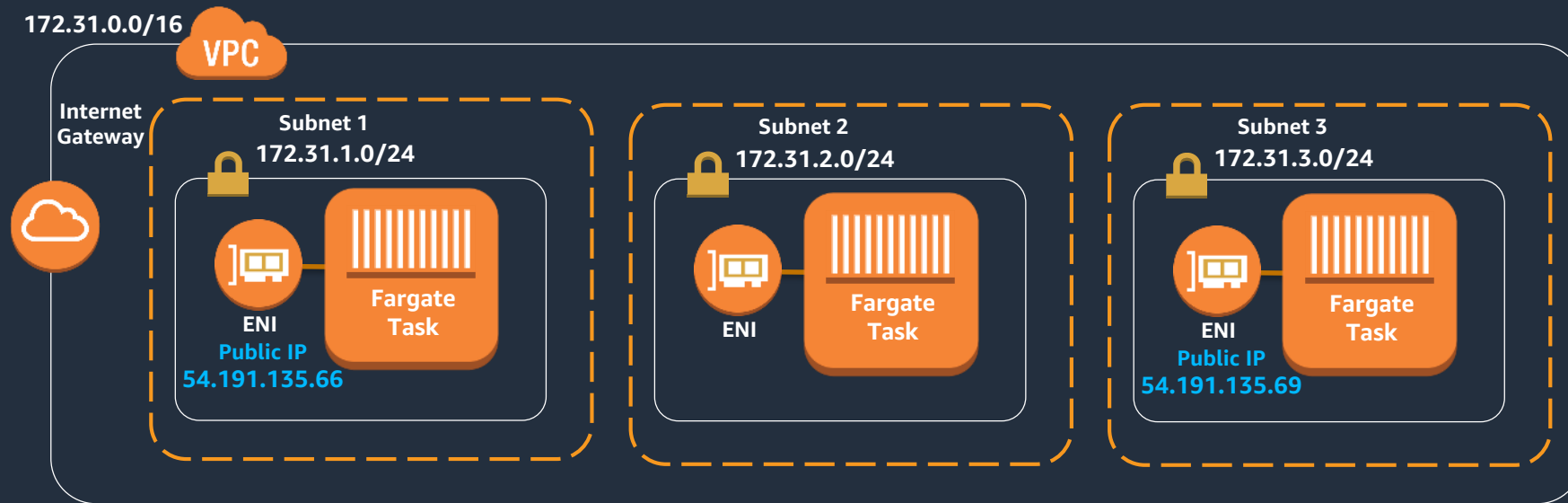
NETWORKING WITH FARGATE IN ECS



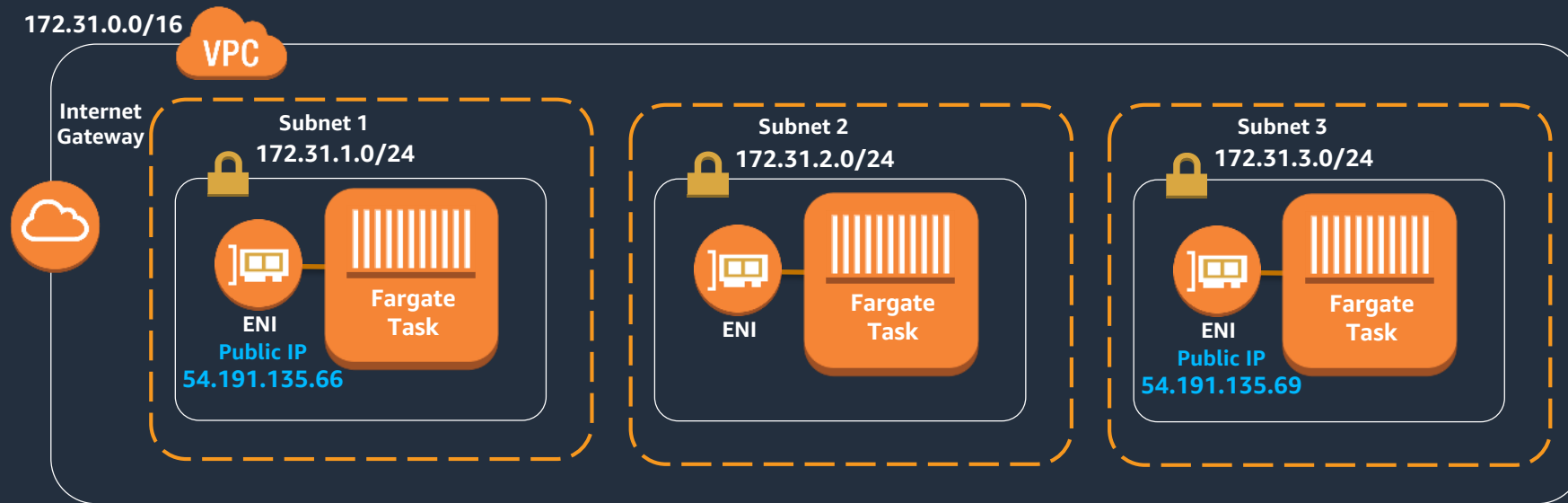
NETWORKING WITH FARGATE IN ECS




NETWORKING WITH FARGATE IN ECS



NETWORKING WITH FARGATE IN ECS



- *AWS VPC* Networking Mode – each task gets its own interface 
- Full control of network access via Security Groups and Network ACLs
- Public IP support

LOAD BALANCING



APPLICATION LOAD BALANCER



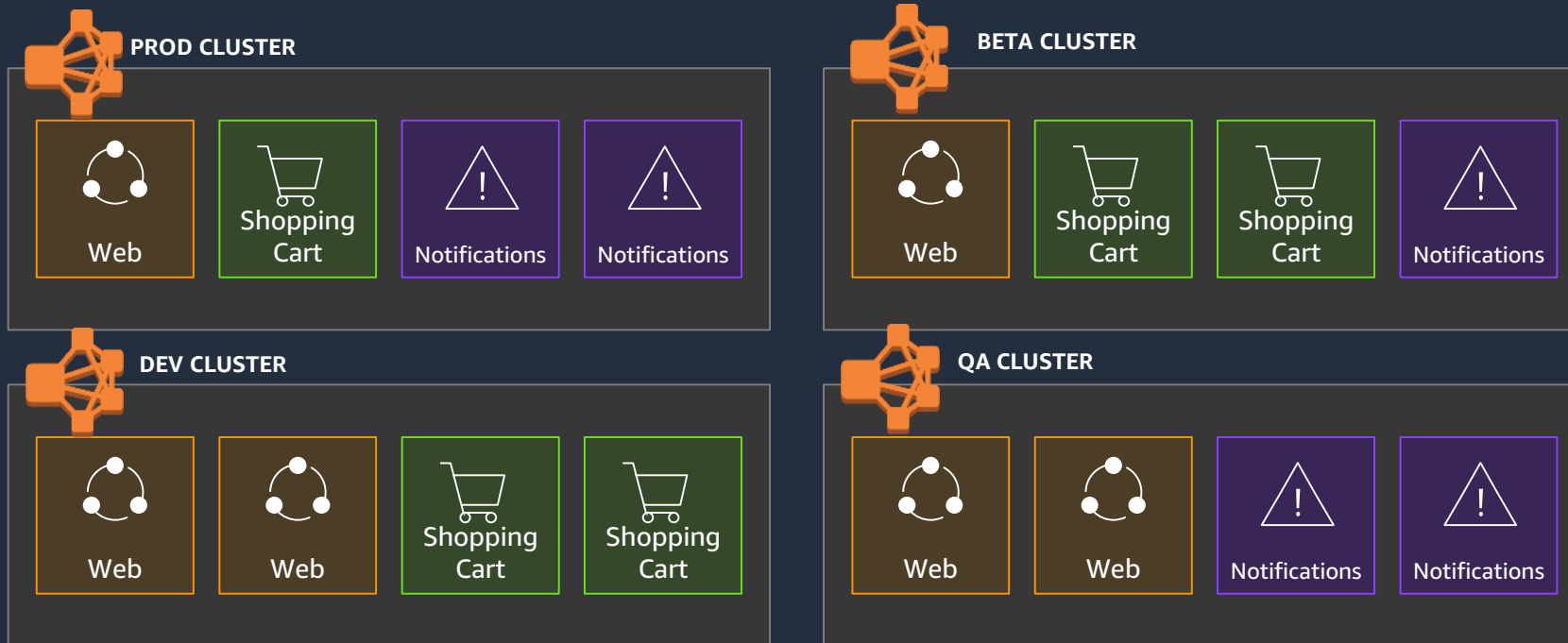
NETWORK LOAD BALANCER



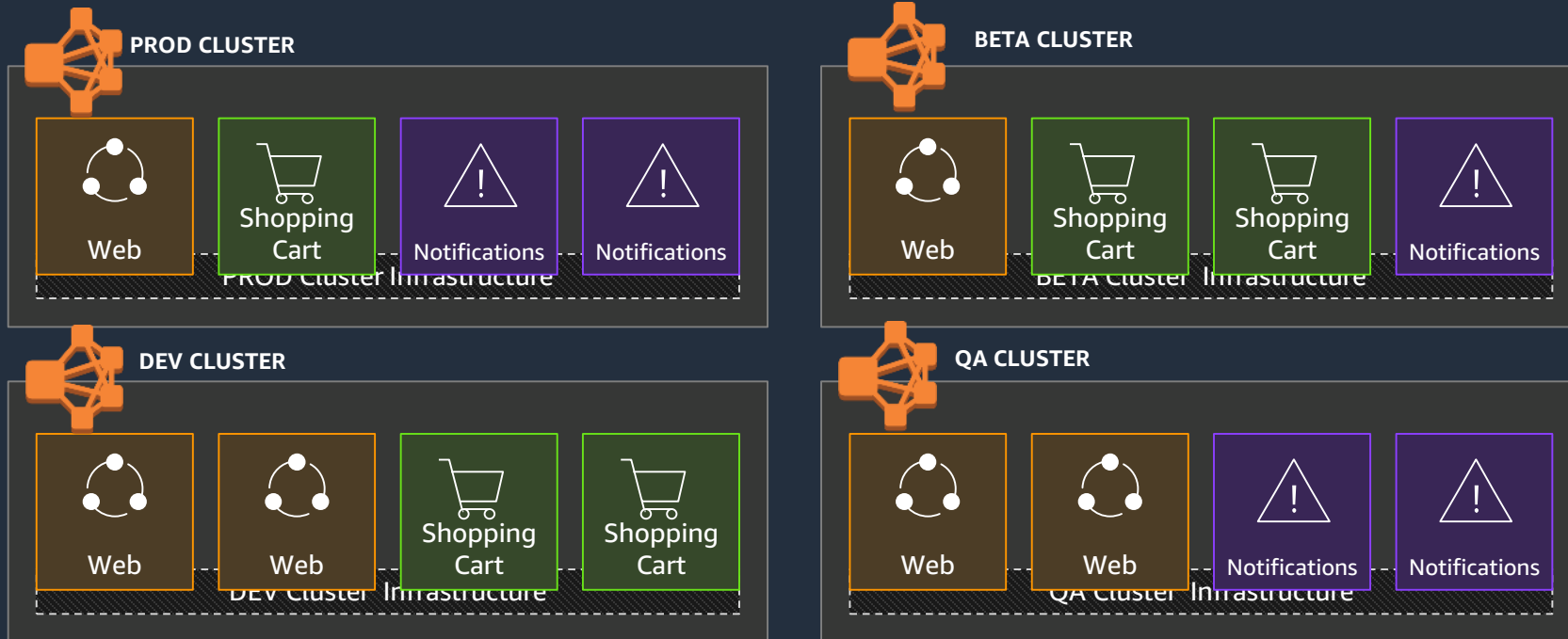
SECURITY



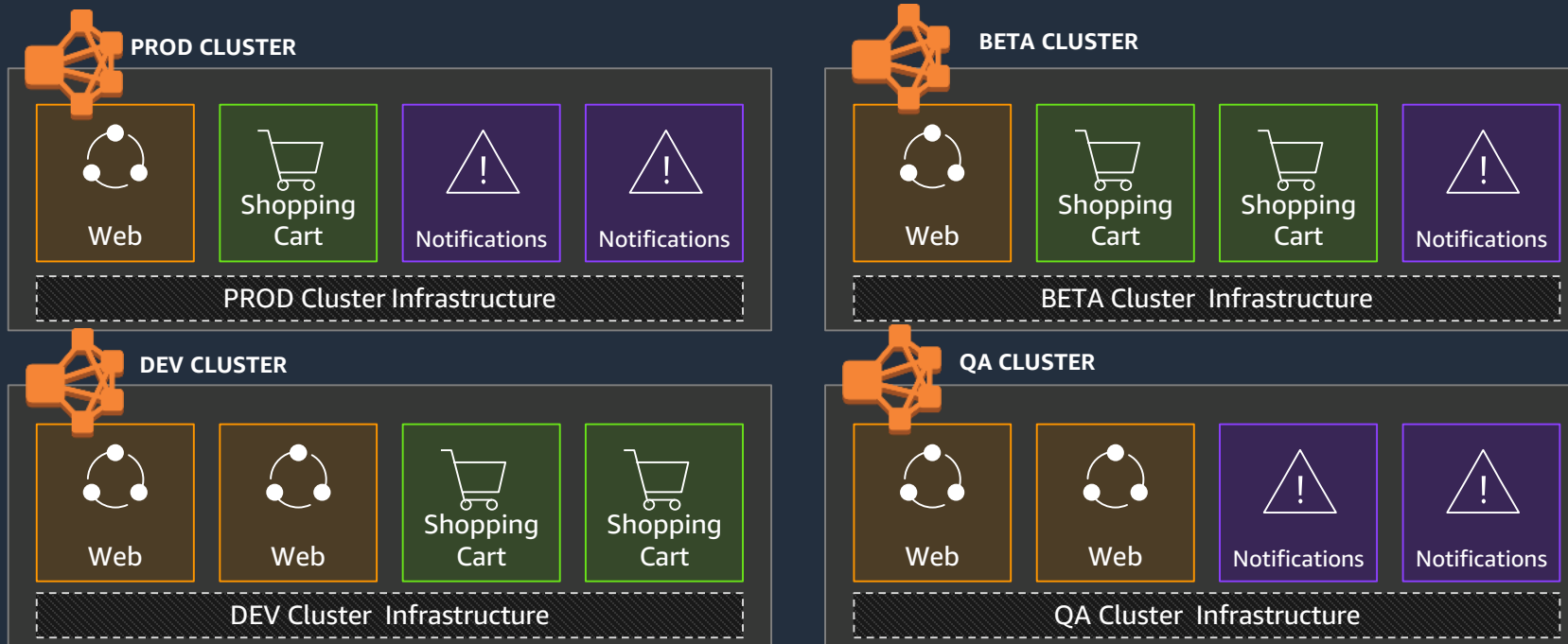
CLUSTER LEVEL ISOLATION



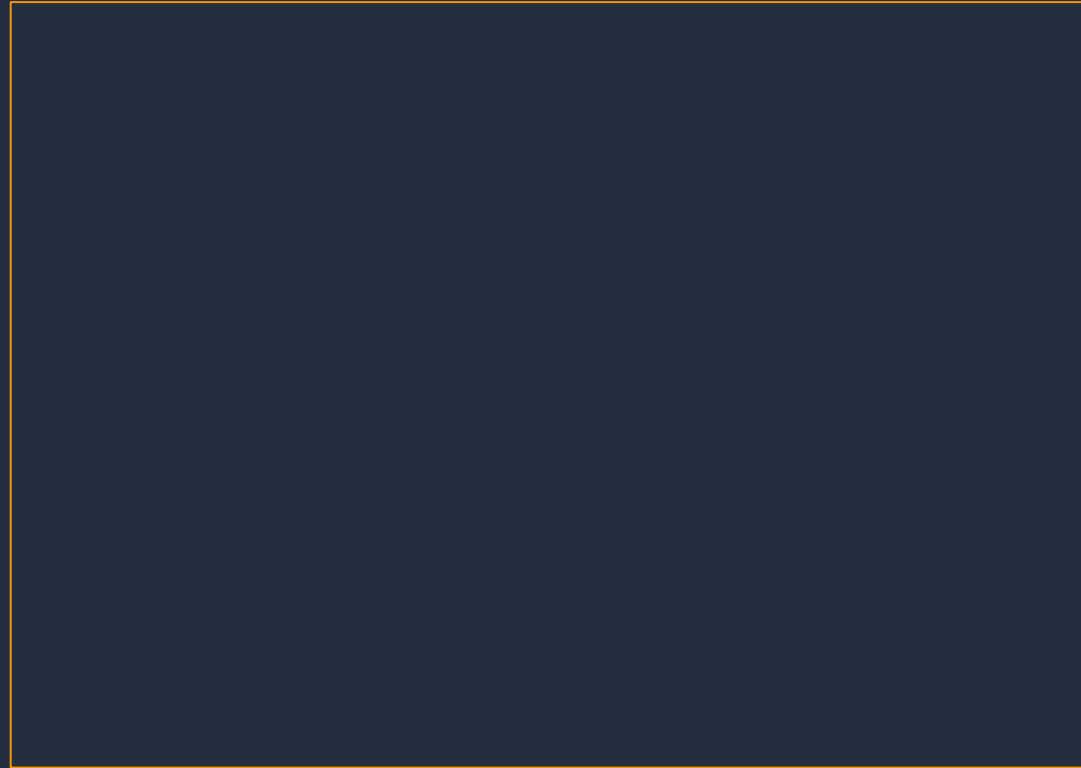
CLUSTER LEVEL ISOLATION



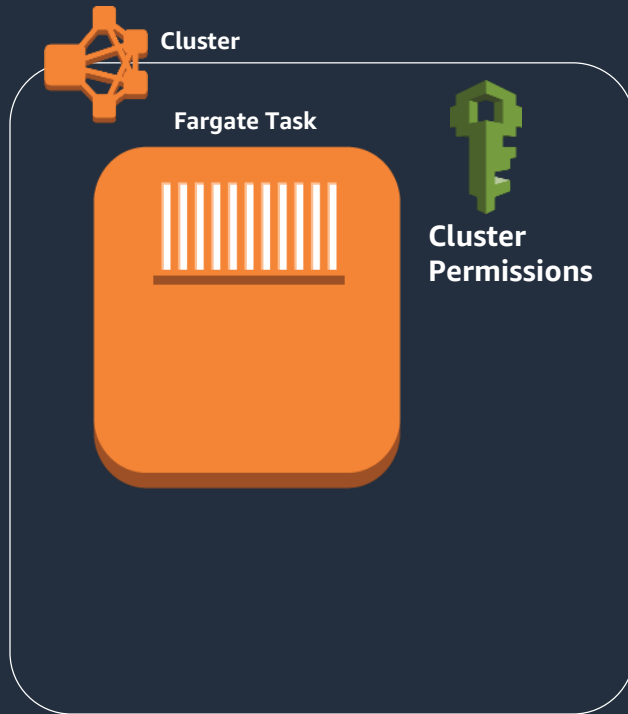
CLUSTER LEVEL ISOLATION



PERMISSION TIERS



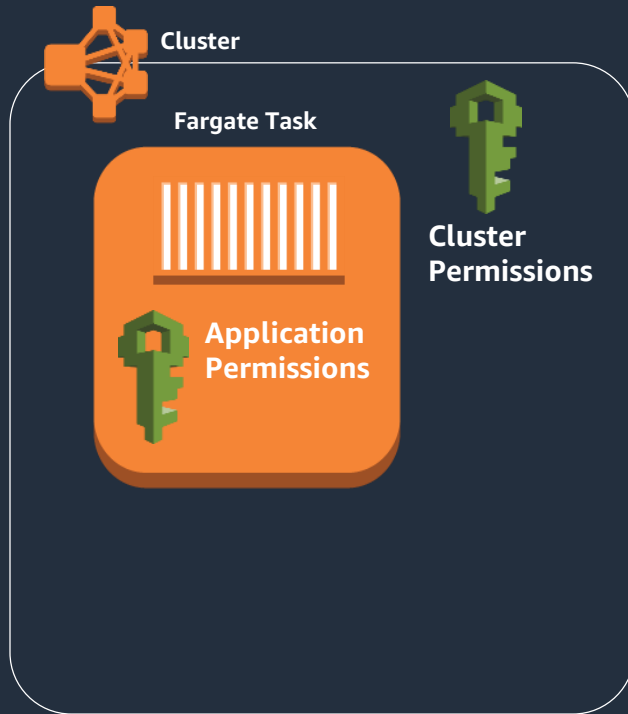
PERMISSION TIERS



Cluster Permissions:

Who can run/see tasks in the cluster?

PERMISSION TIERS



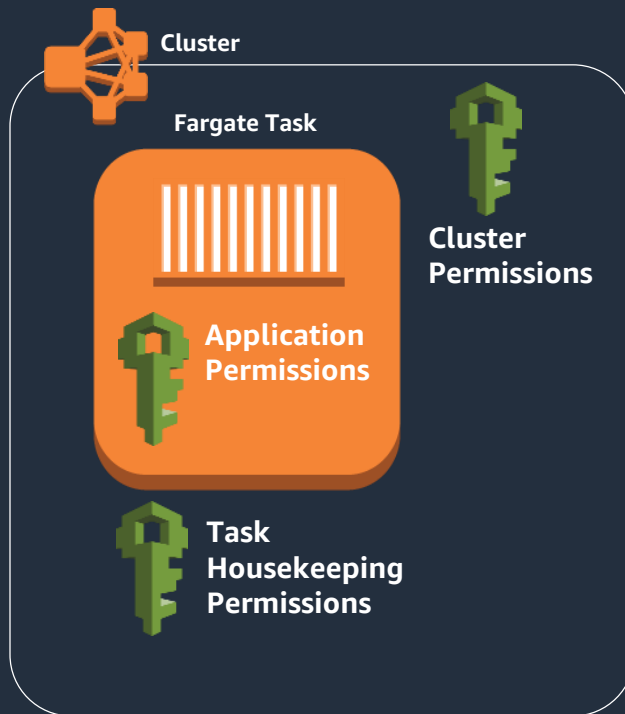
Cluster Permissions:

Who can run/see tasks in the cluster?

Application (Task) Permissions:

Which of my AWS resources can this application access?

PERMISSION TIERS



Cluster Permissions:

Who can run/see tasks in the cluster?

Application (Task) Permissions:

Which of my AWS resources can this application access?

Housekeeping Permissions:

What permissions do I want to grant ECS to perform?

e.g.

- ECR Image Pull
- CloudWatch logs pushing
- ENI creation
- Register/Deregister targets into ELB

CONTAINER REGISTRIES



REGISTRY SUPPORT

Amazon Elastic Container Registry (ECR)



Public Repositories supported



3rd Party Private Repositories (coming soon!)

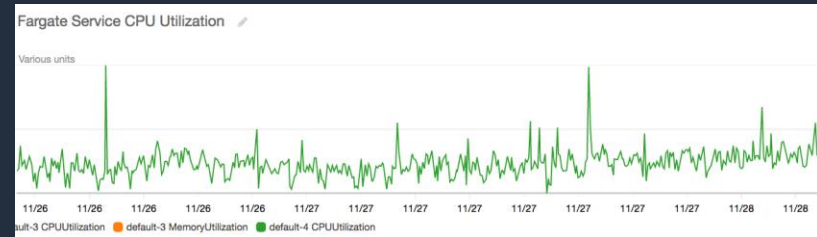


VISIBILITY AND MONITORING

Amazon CloudWatch Logs
Amazon CloudWatch Events supported



Service-level metrics available



CONFIGURATIONS & PRICING



PRICING DIMENSIONS


Dimensions: Task level CPU and memory

Per-second billing

Task level resources

- Configurable independently (within a range)
-

```
{  
  "memory": "1 vCPU",  
  "cpu": "3GB",  
  "networkMode": "AWSVPC",  
  "compatibilities": ["FARGATE", "EC2"],  
  "placementConstraints": [],  
  "containerDefinitions": [  
    {  
  
    <snip>.....  
  }  
]
```



TASK CPU & MEMORY CONFIGURATIONS



Flexible configuration options –
50 CPU/memory configurations

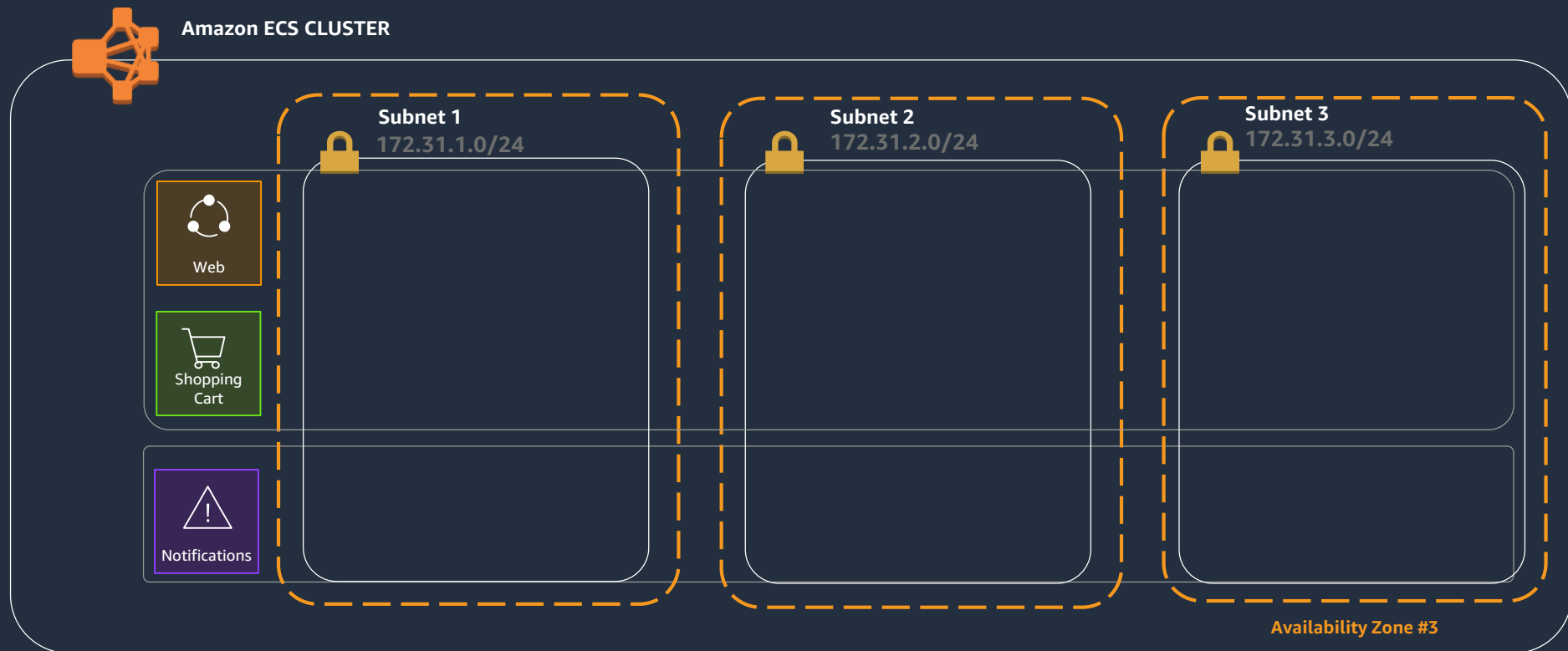
CPU	Memory
256 (.25 vCPU)	512MB, 1GB, 2GB
512 (.5 vCPU)	1GB, 2GB, 3GB, 4GB
1024 (1 vCPU)	2GB, 3GB, 4GB, 5GB, 6GB, 7GB, 8GB
2048 (2 vCPU)	Between 4GB and 16GB in 1GB increments
4096 (4 vCPU)	Between 8GB and 30GB in 1GB increments

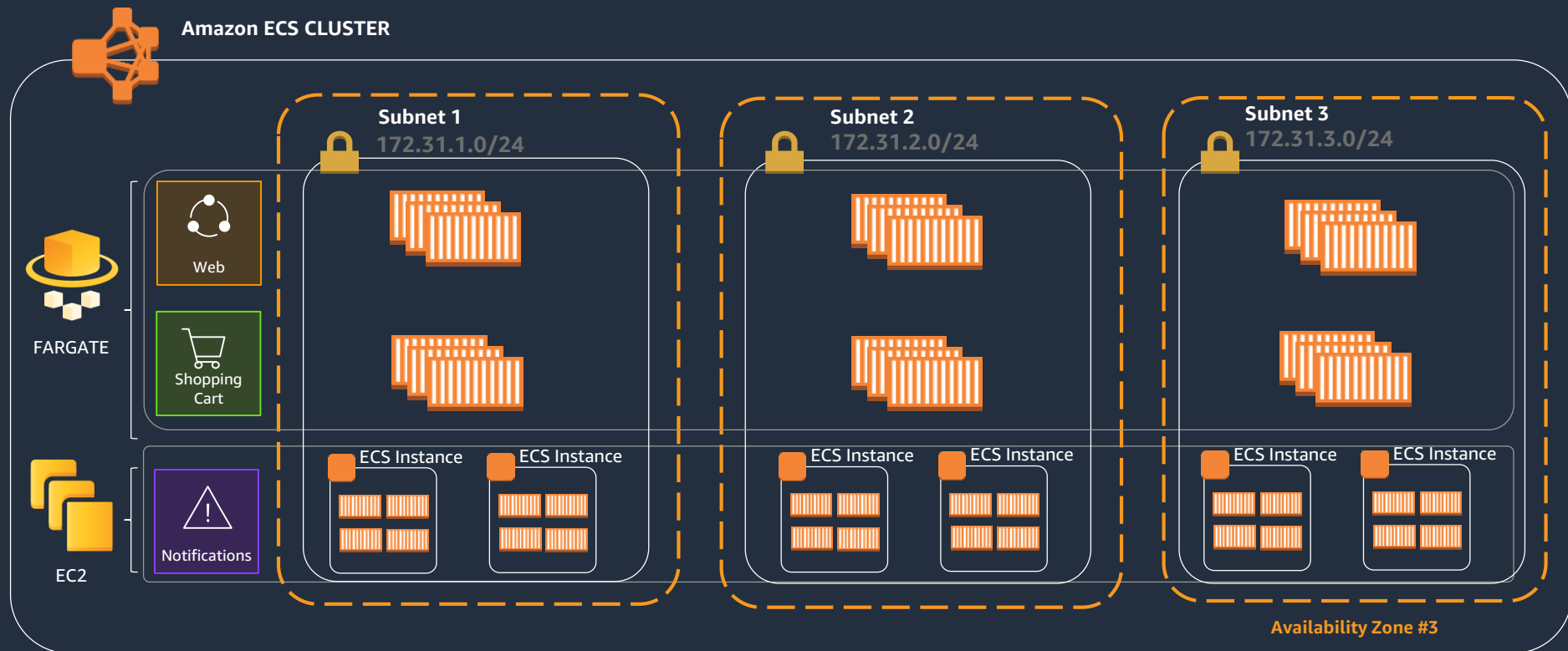


99.99%









EARLY ADOPTERS



PARTNER INTEGRATIONS



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