Node in Production

Module 4: Node, Containers and Amazon Web Services

Azat Mardan @azat_co

Node University

Types of Cloud Computing

- IaaS
- PaaS
- BaaS
- FaaS
- SaaS

Benefits of cloud

- Elastic, scalable, flexible and operational agile
- Disaster recovery
- Automatic software updates
- Capital-expenditure Free
- Increased collaboration
- Work from anywhere
- Standard and expertise
- Reduced time to market and competitiveness
- Environmentally friendly
- Easy to use
- Benefits of mass economy of scale
- Global delivery faster

Major Cloud Providers

- Azure
- Google
- AWS

AWS has many Services

AWS Benefits

- One of the first
- Massive scale
- Innovator with news features and services
- Lots of tools - good dev experience
- Almost a standard with lots of expertise, best practices, experts, books, etc.

AWS Services for Containers

- Elastic Compute Cloud (EC2)
- Elastic Container Service (ECS)
- Elastic Container Registry (ECR)
- Elastic Beanstalk Containers - PaaS
- Docker EE for AWS
- Relational Database Service (RDS)

EC2

Do It Yourself approach

- Amazon Linux or other AMI + Docker Engine
- Docker image (AMI)
- CloudFormation, AWS CLI or web console
- User Data to install Docker Engine

ECS

Managed container service

- Monitors containers
- Allows ELB
- Allows autoscaling
- Allows health checks

ECR

Storage for container images which can be used with EC2, ECS or other services

Elastic BeanStack

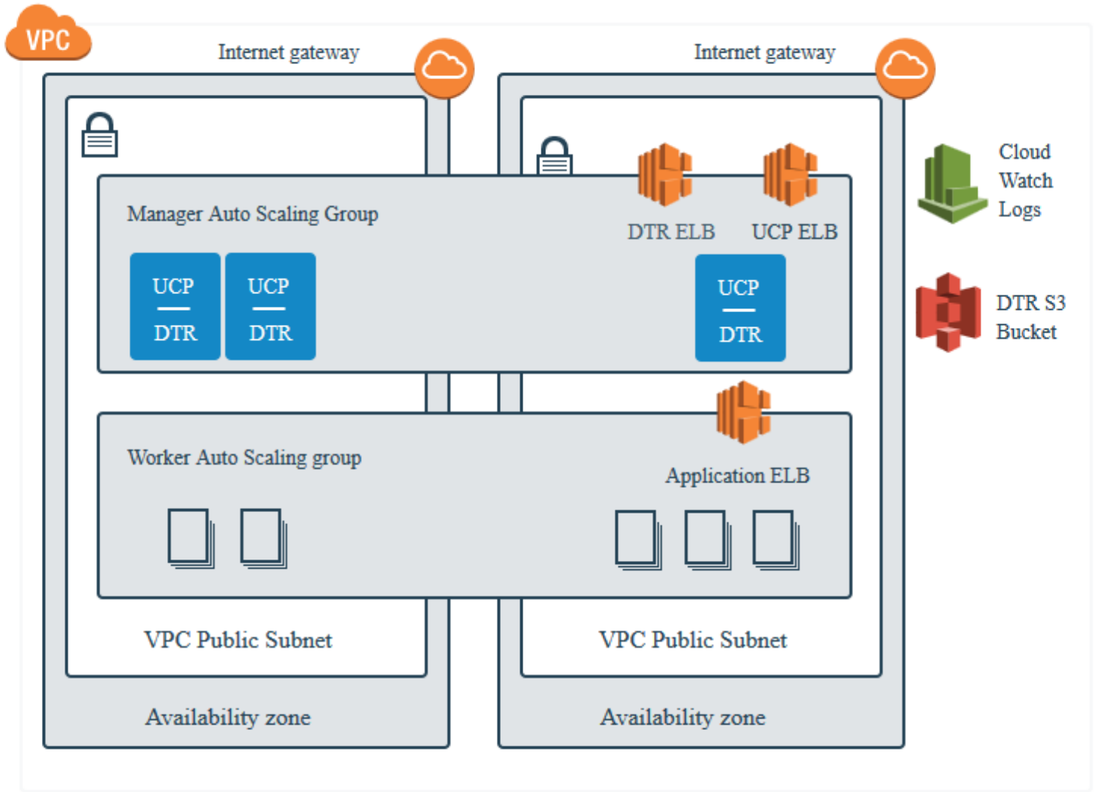
PaaS

Ideal for small services with few containers.

Docker EE

Comprehensive CloudFormation blueprint

https://aws.amazon.com/marketplace/pp/B06XCFDF9K



RDS

Can be used with other services. Allows for managed databases.

Let's cover ECS + ECR usage

AWS EC2 Container Services

- Tasks
- Clusters
- Registries

Registry

Where developers store their images. Allows for versioning and tagging.

Task

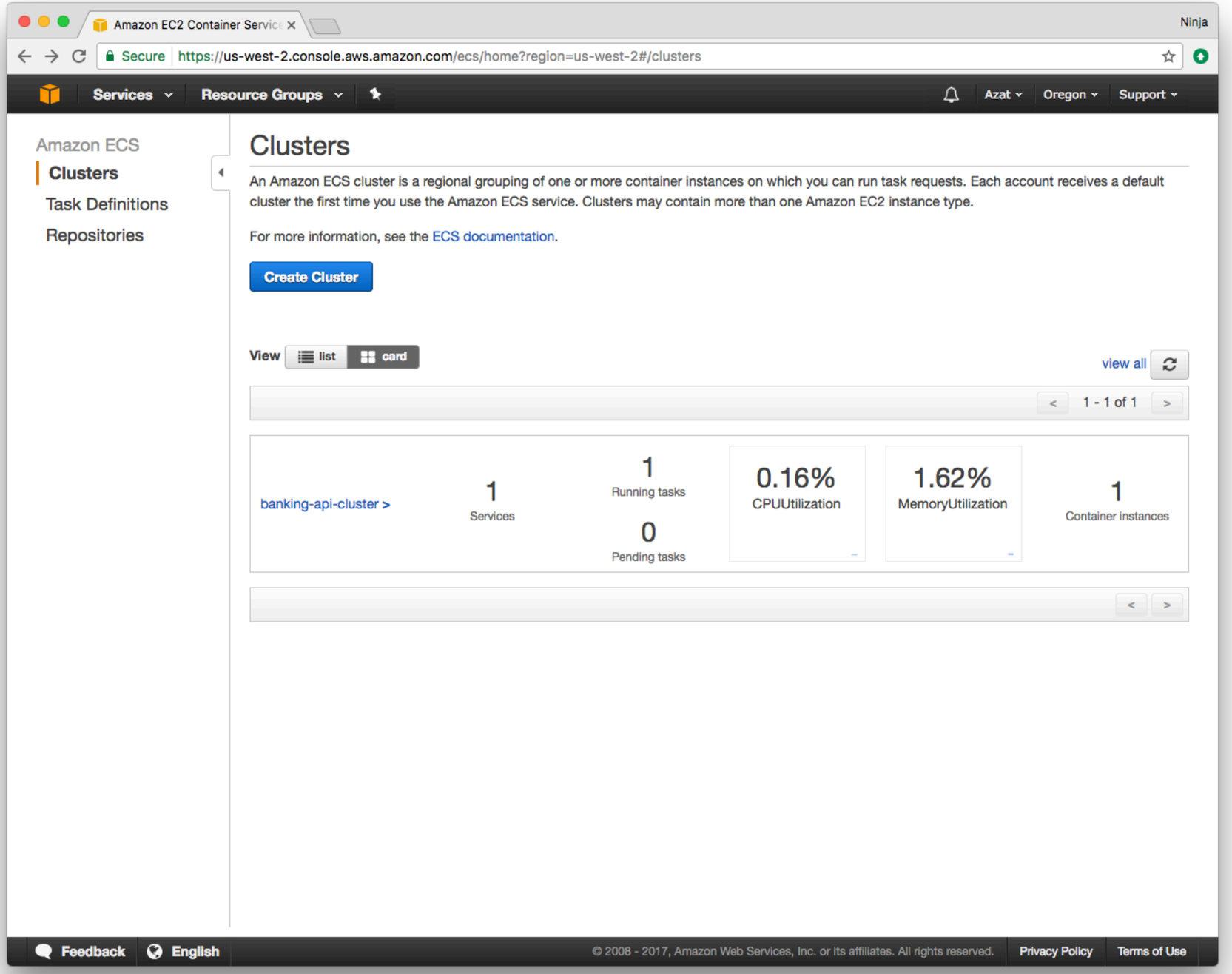
Task definition has info about images, env vars and network.

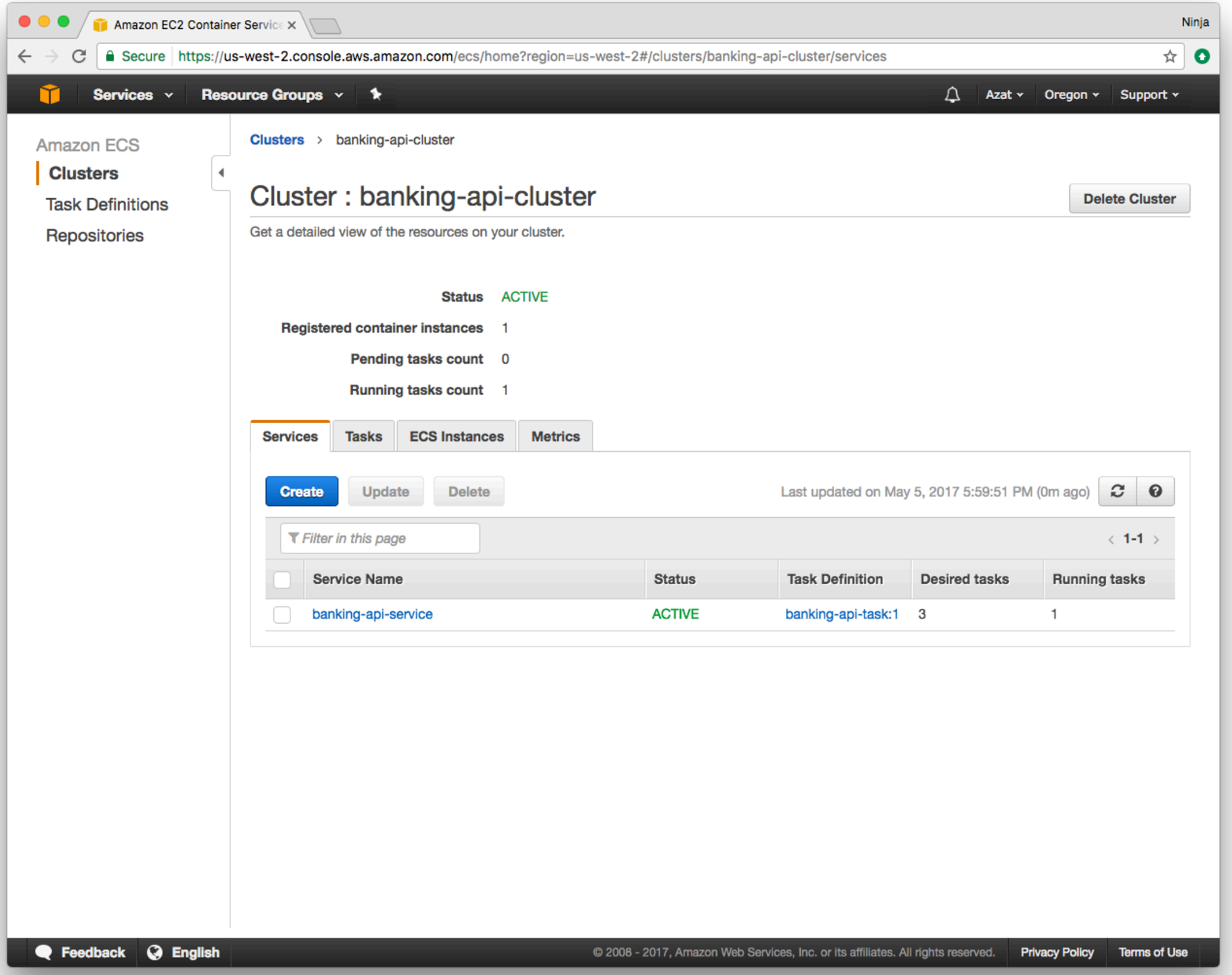
Cluster

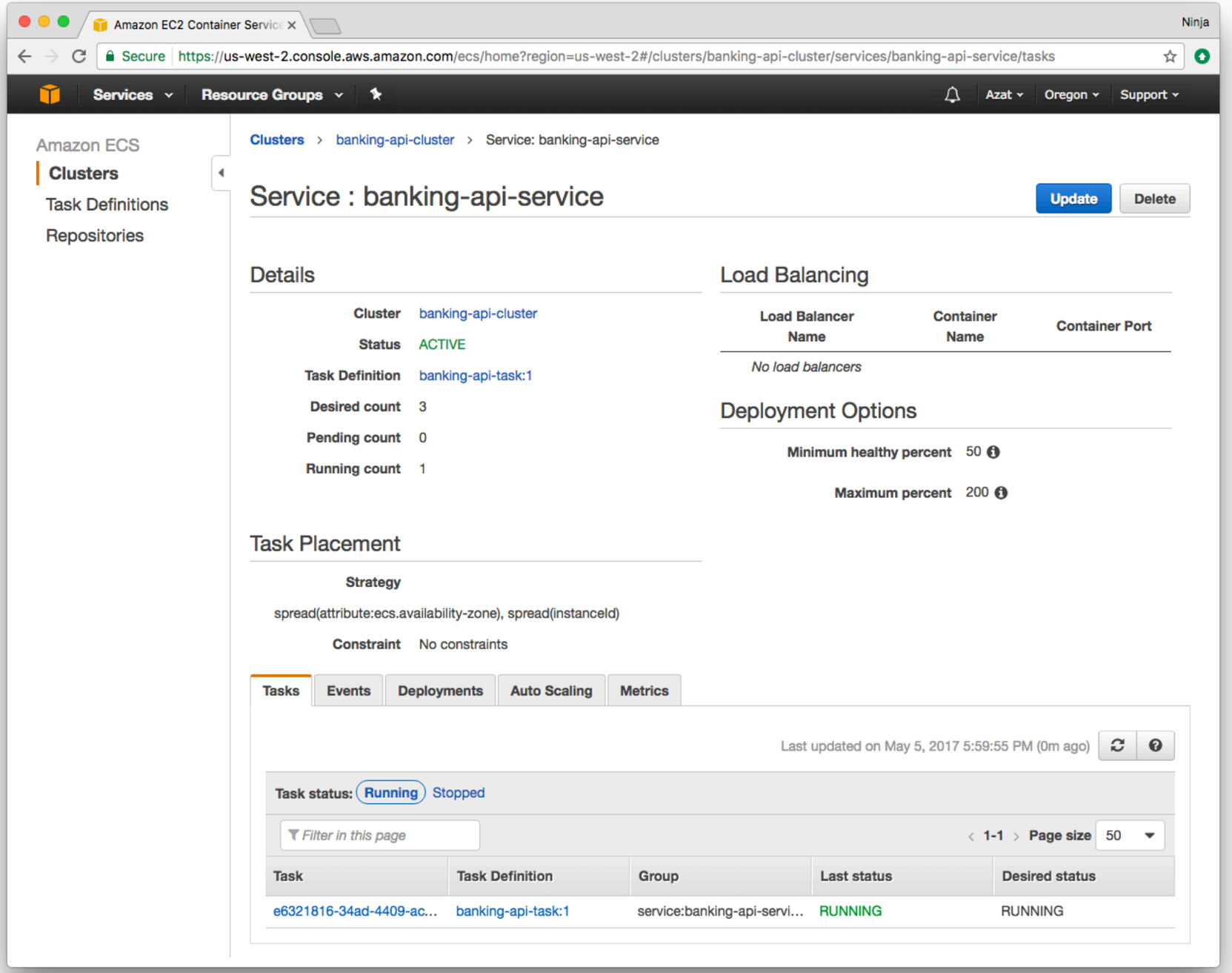
Container cluster is like an EC2 instance where containers run.

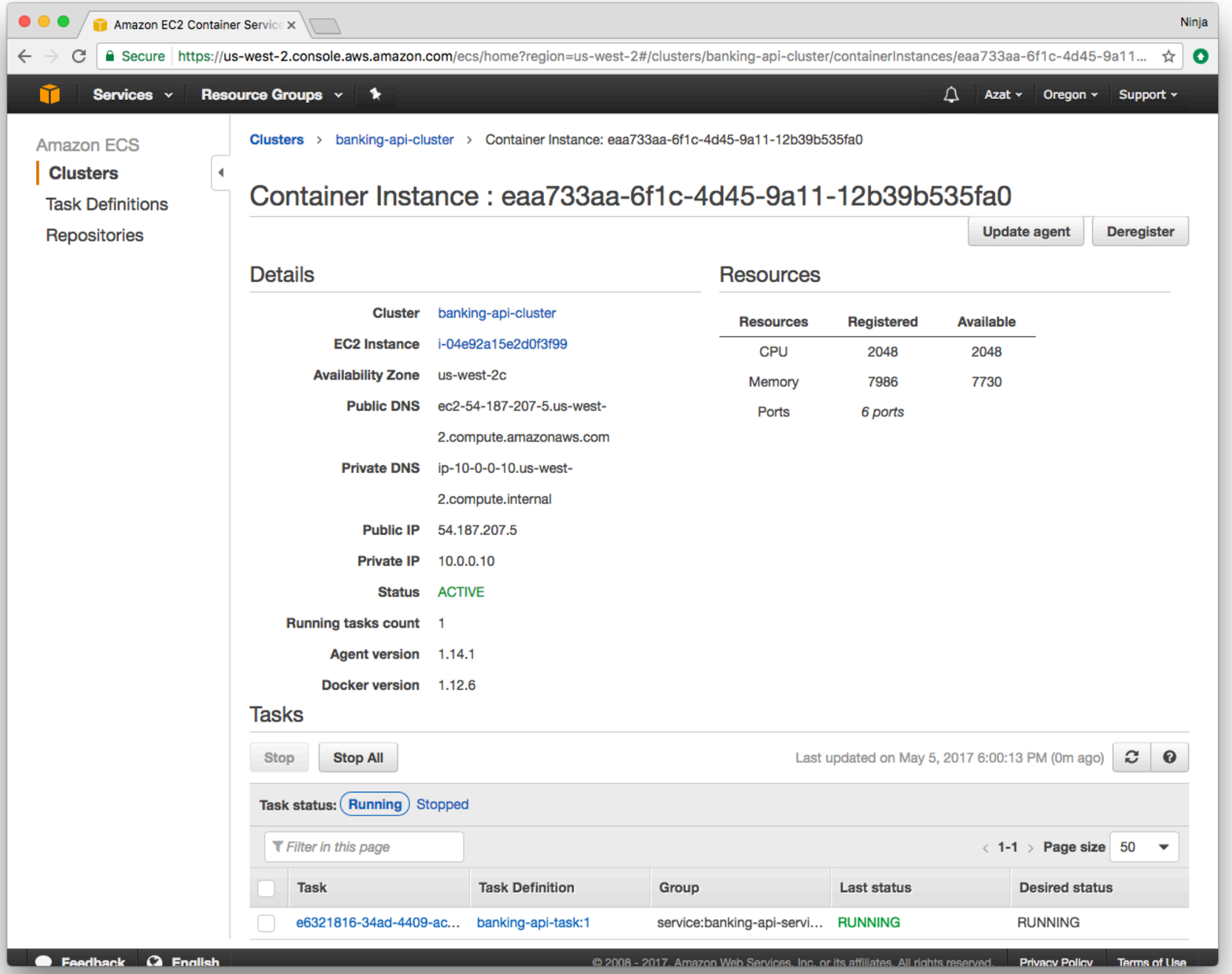
Service

Container service makes sure your containers from task are running in a cluster. ELB and autoscaling group can be added to a service.


Amazon EC2 Container Servic
Ninja
Secure https://us-west-2.console.aws.amazon.com/ecs/home?region=us-west-2#/clusters
Services
Resource Groups
Azat
Oregon
Support
Amazon ECS
Clusters
Task Definitions
Repositories
Clusters
An Amazon ECS cluster is a regional grouping of one or more container instances on which you can run task requests. Each account receives a default cluster the first time you use the Amazon ECS service. Clusters may contain more than one Amazon EC2 instance type.
For more information, see the ECS documentation.
Create Cluster
View list card
view all
1 - 1 of 1
banking-api-cluster >
1
Services
1
Running tasks
0
Pending tasks
0.16%
CPUUtilization
1.62%
MemoryUtilization
1
Container instances
Feedback
English
© 2008 - 2017, Amazon Web Services, Inc. or its affiliates. All rights reserved.
Privacy Policy
Terms of Use


Amazon EC2 Container Servic
Ninja
Secure https://us-west-2.console.aws.amazon.com/ecs/home?region=us-west-2#/clusters/banking-api-cluster/services
Services
Resource Groups
Azat
Oregon
Support
Amazon ECS
Clusters
Task Definitions
Repositories
Clusters › banking-api-cluster
Cluster : banking-api-cluster
Delete Cluster
Get a detailed view of the resources on your cluster.
Status ACTIVE
Registered container instances 1
Pending tasks count 0
Running tasks count 1
Services
Tasks
ECS Instances
Metrics
Create
Update
Delete
Last updated on May 5, 2017 5:59:51 PM (0m ago)
Filter in this page
1-1
Service Name
Status
Task Definition
Desired tasks
Running tasks
banking-api-service
ACTIVE
banking-api-task:1
3
1
Feedback
English
© 2008 - 2017, Amazon Web Services, Inc. or its affiliates. All rights reserved.
Privacy Policy
Terms of Use


Amazon EC2 Container Service
Ninja
Secure https://us-west-2.console.aws.amazon.com/ecs/home?region=us-west-2#/clusters/banking-api-cluster/services/banking-api-service/tasks
Services
Resource Groups
Azat
Oregon
Support
Amazon ECS
Clusters
Task Definitions
Repositories
Clusters > banking-api-cluster > Service: banking-api-service
Service : banking-api-service
Update
Delete
Details
Cluster banking-api-cluster
Status ACTIVE
Task Definition banking-api-task:1
Desired count 3
Pending count 0
Running count 1
Load Balancing
Load Balancer Name
Container Name
Container Port
No load balancers
Deployment Options
Minimum healthy percent 50
Maximum percent 200
Task Placement
Strategy
spread(attribute:ecs.availability-zone), spread(instanceId)
Constraint No constraints
Tasks
Events
Deployments
Auto Scaling
Metrics
Last updated on May 5, 2017 5:59:55 PM (0m ago)
Task status: Running Stopped
Filter in this page
1-1
Page size 50
Task
Task Definition
Group
Last status
Desired status
e6321816-34ad-4409-ac...
banking-api-task:1
service:banking-api-servi...
RUNNING
RUNNING


Amazon EC2 Container Service
Ninja
Secure https://us-west-2.console.aws.amazon.com/ecs/home?region=us-west-2#/clusters/banking-api-cluster/containerInstances/eaa733aa-6f1c-4d45-9a11...
Services
Resource Groups
Azat
Oregon
Support
Amazon ECS
Clusters
Task Definitions
Repositories
Clusters > banking-api-cluster > Container Instance: eaa733aa-6f1c-4d45-9a11-12b39b535fa0
Container Instance : eaa733aa-6f1c-4d45-9a11-12b39b535fa0
Update agent
Deregister
Details
Cluster banking-api-cluster
EC2 Instance i-04e92a15e2d0f3f99
Availability Zone us-west-2c
Public DNS ec2-54-187-207-5.us-west-2.compute.amazonaws.com
Private DNS ip-10-0-0-10.us-west-2.compute.internal
Public IP 54.187.207.5
Private IP 10.0.0.10
Status ACTIVE
Running tasks count 1
Agent version 1.14.1
Docker version 1.12.6
Resources
Resources Registered Available
CPU 2048 2048
Memory 7986 7730
Ports 6 ports
Tasks
Stop
Stop All
Last updated on May 5, 2017 6:00:13 PM (0m ago)
Task status: Running Stopped
Filter in this page
1-1
Page size 50
Task Task Definition Group Last status Desired status
e6321816-34ad-4409-ac... banking-api-task:1 service:banking-api-servi... RUNNING RUNNING
Feedback
English
© 2008 - 2017, Amazon Web Services, Inc. or its affiliates. All rights reserved.
Privacy Policy
Terms of Use

AWS is vast

You should have Elastic Load Balancer, multi-availability zone deployment, Continuous Delivery S3, and managed database services.

Learn more about AWS by taking AWS Intro and AWS Intermediate

Demo 

Deployment using ECR and EC2 ECS.

Lab 2: AWS Containers

Task: Deploy two containers (API and DB) which connect using ECR and EC2 ECS.

Detailed instructions and link are in labs/2-aws-containers.md

Time to finish: 20 min ☁️

Congrats! 🏁