

LAB: Create a Task Definition and run it with Fargate ECS

You need:

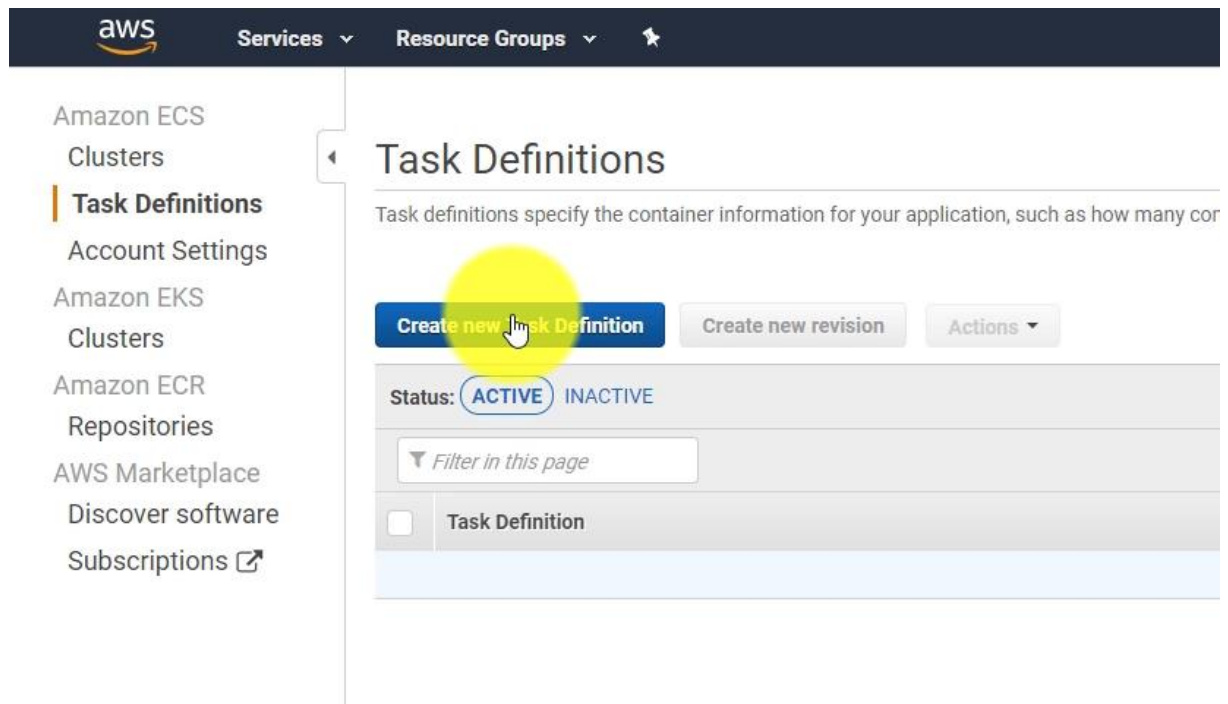
- An AWS Account

Duration of the Lab: 30 Minutes.

Difficulty: easy

Create a Task Definition

Before we can get started, we have to create a new Task Definition. Create one by going into the “Elastic Container Service” Dashboard and open “Task Definition” on the left side and then “Create new Task Definition”:





Select the Launch Type “Fargate”, because we want to run this on a Fargate Cluster:

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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	EC2
	
Price based on task size	Price based on resource usage
Requires network mode awsvpc	Multiple network modes available
AWS-managed infrastructure, no Amazon EC2 instances to manage	Self-managed infrastructure using Amazon EC2 instances

*Required

Cancel

Next step

Enter a Task-Definition name, like “Simple-apache-server”, don’t give it any Task Role:

Configure task and container definitions

A task definition specifies which containers are included in your task and how they interact with each other. You can also specify data volumes for your containers to use. [Learn more](#)

Task Definition Name* ⓘ

Requires Compatibilities* FARGATE

Task Role ⓘ

Optional IAM role that tasks can use to make API requests to authorized AWS services. Create an Amazon Elastic Container Service Task Role in the [IAM Console](#) ⓘ

Network Mode ⓘ

If you choose <default>, ECS will start your container using Docker's default networking mode, which is Bridge on Linux and NAT on Windows. <default> is the only supported mode on Windows.

Give it 0.5 GB of RAM and 0.25 vCPUs.

Then add a container:

Give it a name, e.g. “apachecontainer”, and specify the image. We take the httpd image from Docker Hub with the tag “latest”. Give it 128 MB of Ram as a soft limit. Also map Port 80 from the container.

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▼ Standard

Container name*

apachecontainer

Image*

httpd:latest

Private repository authentication*

☐

Memory Limits (MiB)

Soft limit ▼

128

+ Add Hard limit

Define hard and/or soft memory limits in MiB for your container. Hard and soft limits correspond to the 'memory' and 'memoryReservation' parameters, respectively, in task definitions.
ECS recommends 300-500 MiB as a starting point for web applications.

Port mappings

Container port

80

Protocol

tcp ▼

+ Add port mapping

Add the cloudwatch log so that it auto-configures CloudWatch logs. This means you can then watch the logs in a combined way:

Log configuration

☒ Auto-configure CloudWatch Logs

Log driver

awslogs ▼

Log options

Key

Value

awslogs-group

Value ▼

/ecs/simple-apache-ser ✕

awslogs-region

Value ▼

eu-central-1 ✕

awslogs-stream-prefix

Value ▼

ecs ✕

Add key

Value ▼

Add value

Then add the container. And also create the Task Definition.

Create a Cluster

Select a Networking Only Cluster:

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Select cluster template

The following cluster templates are available to simplify cluster creation. Additional configuration and integrations can be added later.

Networking only

Resources to be created:

- Cluster
- VPC (optional)
- Subnets (optional)

Powered by AWS Fargate

EC2 Linux + Networking

Resources to be created:

- Cluster
- VPC
- Subnets
- Auto Scaling group with Linux AMI

EC2 Windows + Networking

Resources to be created:

- Cluster
- VPC
- Subnets
- Auto Scaling group with Windows AMI

*Required

Cancel **Next step**

Give the Cluster a Name, e.g. "myfargatecluster"

Configure cluster

Cluster name* ⓘ

Networking

Create a new VPC for your cluster to use. A VPC is an isolated portion of the AWS Cloud populated by AWS objects, such as Fargate tasks.

Create VPC ☐ Create a new VPC for this cluster

Tags

Key	Value
<input type="text" value="Add key"/>	<input type="text" value="Add value"/>

CloudWatch Container Insights

CloudWatch Container Insights is a monitoring and troubleshooting solution for containerized applications and microservices. It collects, aggregates, and summarizes compute utilization such as CPU, memory, disk, and network; and diagnostic information such as container restart failures to help you isolate issues with your clusters and resolve them quickly. [Learn more](#)

CloudWatch Container Insights ☐ Enable Container Insights

*Required Cancel Previous Create

And hit Create.

Create a new Service

Inside the new Cluster open the Services tab and hit create:

Amazon ECS

- Clusters
- Task Definitions
- Account Settings

Amazon EKS

- Clusters

Amazon ECR

- Repositories

AWS Marketplace

- Discover software
- Subscriptions

Clusters > myfargatecluster

Cluster : myfargatecluster

Get a detailed view of the resources on your cluster.

Cluster ARN	arn:aws:ecs:eu-central-1:161952721022:cluster/myfargatecluster
Status	PROVISIONING
Registered container instances	0
Pending tasks count	0 Fargate, 0 EC2
Running tasks count	0 Fargate, 0 EC2
Active service count	0 Fargate, 0 EC2
Draining service count	0 Fargate, 0 EC2

1 Services 2 Tasks ECS Instances Metrics Scheduled Tasks Tags Capacity Providers

2 Create Update Delete Actions

Filter in this page Launch type ALL Service type ALL

Service Name	Status	Service type	Task Definition
No results			

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Run the TaskDefinition we created earlier (1) give it a name, for example apacheservice (2) and set the number of tasks to run to 2 (3):

Launch type ☒ FARGATE ☐ EC2 ⓘ

Task Definition ⓘ

Family

1 simple-apache-server ▼ Enter a value

Revision

1 (latest) ▼

Platform version LATEST ▼ ⓘ

Cluster myfargatecluster ▼ ⓘ

Service name apacheservice 2 ⓘ

Service type* REPLICA ⓘ

Number of tasks 2 3 ⓘ

Minimum healthy percent 100 ⓘ

Maximum percent 200 ⓘ

Select your standard VPC and place the tasks in any of the three subnets:

Configure network

VPC and security groups

VPC and security groups are configurable when your task definition uses the awsvpc network mode.

Cluster VPC* vpc-6570b40f (172.31.0.0/16) ⓘ

Subnets* ⓘ

- subnet-cfd47ba5
(172.31.16.0/20) - eu-central-1a
assign ipv6 on creation: Disabled
- subnet-bc21c8f0
(172.31.0.0/20) - eu-central-1c
assign ipv6 on creation: Disabled
- subnet-d5f6eca8
(172.31.32.0/20) - eu-central-1b
assign ipv6 on creation: Disabled

⌵

Make sure in the security group Port 80 as inbound traffic is allowed:

Configure security groups ⓘ

A security group is a set of firewall rules that control the traffic for your task. On this page, you can add rules to allow specific traffic to reach your task, or you can choose to use an existing security group. [Learn more.](#)

Assigned security groups ☒ Create new security group
☐ Select existing security group

Security group name* apache-9936 ⓘ

Description Mon Apr 06 2020 13:49:54 GMT+0200 (Central European S) ⓘ

Inbound rules for security group

Type	Protocol	Port range	Source	
HTTP ⌵	TCP	80	Anywhere ⌵	0.0.0.0/0, ::/0 ⓘ

➕ Add rule

Auto-Assign a public IP: Enabled

Select “none” as load balancer and disable the service discovery.

Don't do any autoscaling for this service:

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Set Auto Scaling (optional)

Automatically adjust your service's desired count up and down within a specified range in response to CloudWatch alarms. You can modify your Service Auto Scaling configuration at any time to meet the needs of your application.

- Service Auto Scaling**
- ☒ Do not adjust the service's desired count
 - ☐ Configure Service Auto Scaling to adjust your service's desired count

*Required

Cancel

Previous

Next step

Review everything and launch the service:

Review

Edit

Cluster myfargatecluster

Launch type FARGATE

Task Definition simple-apache-server:1

Service name apacheservice

Service type REPLICA

Number of tasks 2

Minimum healthy percent 100

Maximum percent 200

Configure network

Edit

VPC Id vpc-6570b40f

Subnets subnet-cfd47ba5, subnet-bc21c8f0, subnet-d5f6eca8

Create new security group apache-9936

Auto assign IP ENABLED

Set Auto Scaling (optional)

Edit

not configured

Cancel

Previous

Create Service

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Watch the running Tasks

Once your service is starting to run the tasks, you can switch over to your cluster Tasks and see how they slowly change the state from Provisioning -> pending -> running:

Cluster : myfargatecluster

Get a detailed view of the resources on your cluster.

Cluster ARN: arn:aws:ecs:eu-central-1:161952721022:cluster/myfargatecluster

Status: ACTIVE

Registered container instances: 0

Pending tasks count: 2 Fargate, 0 EC2

Running tasks count: 0 Fargate, 0 EC2

Active service count: 1 Fargate, 0 EC2

Draining service count: 0 Fargate, 0 EC2

Services | **Tasks** | ECS Instances | Metrics | Scheduled Tasks | Tags | Capacity Providers

Run new Task | Stop | Stop All | Actions

Desired task status: (Running) Stopped

Filter in this page | Launch type: ALL

Task	Task definition	Container instance	Last status	Desired status	Started By	Group	Launch type	Platform version
<input type="checkbox"/> 466efb0f-9c98-4e98-96...	simple-apache-server:1	-	PROVISIONING	RUNNING	ecs-svc/928496099822...	service:apache-service	FARGATE	1.3.0
<input type="checkbox"/> 8547aa12-a438-43f8-bb...	simple-apache-server:1	-	PROVISIONING	RUNNING	ecs-svc/928496099822...	service:apache-service	FARGATE	1.3.0

Logs of running Containers

To get the logs of all running containers in all tasks, go back to your service, open it:

Cluster : myfargatecluster

Get a detailed view of the resources on your cluster.

Cluster ARN: arn:aws:ecs:eu-central-1:161952721022:cluster/myfargatecluster

Status: ACTIVE

Registered container instances: 0

Pending tasks count: 0 Fargate, 0 EC2

Running tasks count: 2 Fargate, 0 EC2

Active service count: 1 Fargate, 0 EC2

Draining service count: 0 Fargate, 0 EC2

Services | Tasks | ECS Instances | Metrics | Scheduled Tasks | Tags | Capacity Providers

Create | Update | Delete | Actions

Filter in this page | Launch type: ALL | Service type: ALL

Service Name	Status	Service type
<input type="checkbox"/> apache-service	ACTIVE	REPLICA

Then open the Logs-Tab and see that you get the logs from all running containers. You can also filter logs here:

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Clusters > myfargatecluster > Service: apacheservice

Service : apacheservice

Cluster

myfargatecluster

Status

ACTIVE

Task definition

simple-apache-server:1

Service type

REPLICA

Launch type

FARGATE

Platform version

LATEST(1.3.0)

Service role

AWSServiceRoleForECS

Desired count

2

Pending count

0

Running count

2

Details

Tasks

Events

Auto Scaling

Deployments

Metrics

Tags

Logs

Task status

RUNNING

STOPPED

Filter logs

×

All

30s

5m

1h

6h

1d

1w

Last

Open the Apache in the Container

To get access to the underlying services, you have to get access to the IP Addresses of the running tasks. Open the tasks tab from your service:

Service : apacheservice 1

Cluster

myfargatecluster

Status

ACTIVE

Task definition

simple-apache-server:1

Service type

REPLICA

Launch type

FARGATE

Platform version

LATEST(1.3.0)

Service role

AWSServiceRoleForECS

Details

2 Tasks

Events

Auto Scaling

Deployments

Metrics

Tags

Logs

Task status: Running Stopped

Filter in this page

Task	Task Definition	Last status
3 466efbbf-8c98-4e98-962a-c0c2d...	simple-apache-server:1	RUNNING
8547aa12-a438-43f8-bbe8-8b05...	simple-apache-server:1	RUNNING

And open one of the services in your tasks:

Each task has their own Elastic Network Interface (ENI). And each ENI has its own IP Address:

Clusters > myfargatecluster > Task: 466efbbf-8c98-4e98-962a-c0c2d3a7b65a

Task : 466efbbf-8c98-4e98-962a-c0c2d3a7b65a

Details Tags Logs

Cluster myfargatecluster

Launch type FARGATE

Platform version 1.3.0

Task definition simple-apache-server:1

Group service:apacheservice

Task role None

Last status RUNNING

Desired status RUNNING

Created at 2020-04-06 13:51:48 +0200

Started at 2020-04-06 13:52:22 +0200

Network

Network mode awsvpc

ENI eni-010337ad349083357

Subnet Id subnet-d5f6eca8

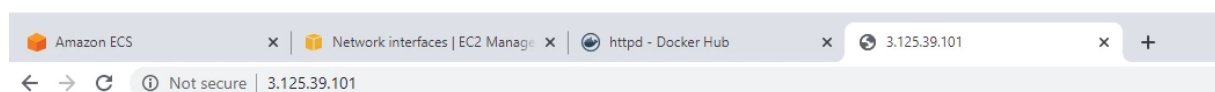
Private IP 172.31.47.181

Public IP 3.125.39.101

Mac address 06:7d:77:a9:7b:c6

Containers

Copy the Address, and open a new Browser Tab:



It works!

It should output that it works.

Repeat the same with the other tasks, it should have a different IP Address.

Because we have no load-balancer the two tasks are running an apache on two different IP addresses. A Load-Balancer could balance the load by spreading traffic between those two tasks now.

Cleanup

To save money tear down your Service:

[Clusters](#) > myfargatecluster

Cluster : myfargatecluster

Get a detailed view of the resources on your cluster.

Cluster ARN `arn:aws:ecs:eu-central-1:161952721022:cluster/myfargatecluster`

Status **ACTIVE**

Registered container instances 0

Pending tasks count 0 Fargate, 0 EC2

Running tasks count 2 Fargate, 0 EC2

Active service count 1 Fargate, 0 EC2

Draining service count 0 Fargate, 0 EC2

1 **Services** Tasks ECS Instances Metrics Scheduled Tasks Tags Capacity Providers

Create Update 3 Delete Actions

Filter in this page Launch type ALL Service type ALL

<input type="checkbox"/>	Service Name	Status	Service type
2 <input type="checkbox"/>	apacheservice	ACTIVE	REPLICA

And as soon as the Tasks stopped also delete the Cluster:

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The screenshot shows the AWS Management Console interface for the 'myfargatecluster'. A 'Delete Cluster' modal dialog is open, asking for confirmation to delete the cluster and all associated ECS resources. The dialog includes a warning that deleting the cluster does not affect CloudFormation resources. A red arrow points from the 'Delete Cluster' button in the top right of the console to the 'Delete' button in the modal. A yellow circle highlights the text input field where the user must enter 'delete me' to confirm deletion.

Cluster : myfargatecluster

Get a detailed view of the resources on your cluster.

Cluster ARN: arn:aws:ecs:eu-central-1:123456789012:cluster/myfargatecluster

Status: ACTIVE

Registered container instances: 0

Pending tasks count: 0 Fargate, 0 EC2

Running tasks count: 0 Fargate, 0 EC2

Active service count: 0 Fargate, 0 EC2

Draining service count: 1 Fargate, 0 EC2

Services: Tasks ECS Instances Metrics Schedules

Run new Task Actions

Desired task status: Running Stopped

Filter in this page Launch type ALL

Task	Task definition	Container instance	Last status	Desired status	Started By	Group	Launch type	Platform version
466efbfb-8c98-4e98-96...	simple-apache-server:1	~	STOPPED (Scaling activ...	STOPPED	ecs-svc/928496099822...	service:apacheservice	FARGATE	1.3.0
8547aa12-a438-43f8-bb...	simple-apache-server:1	~	STOPPED (Scaling activ...	STOPPED	ecs-svc/928496099822...	service:apacheservice	FARGATE	1.3.0

Last updated on April 6, 2020 1:55:34 PM (0m ago)

Lab End
