

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

You need:

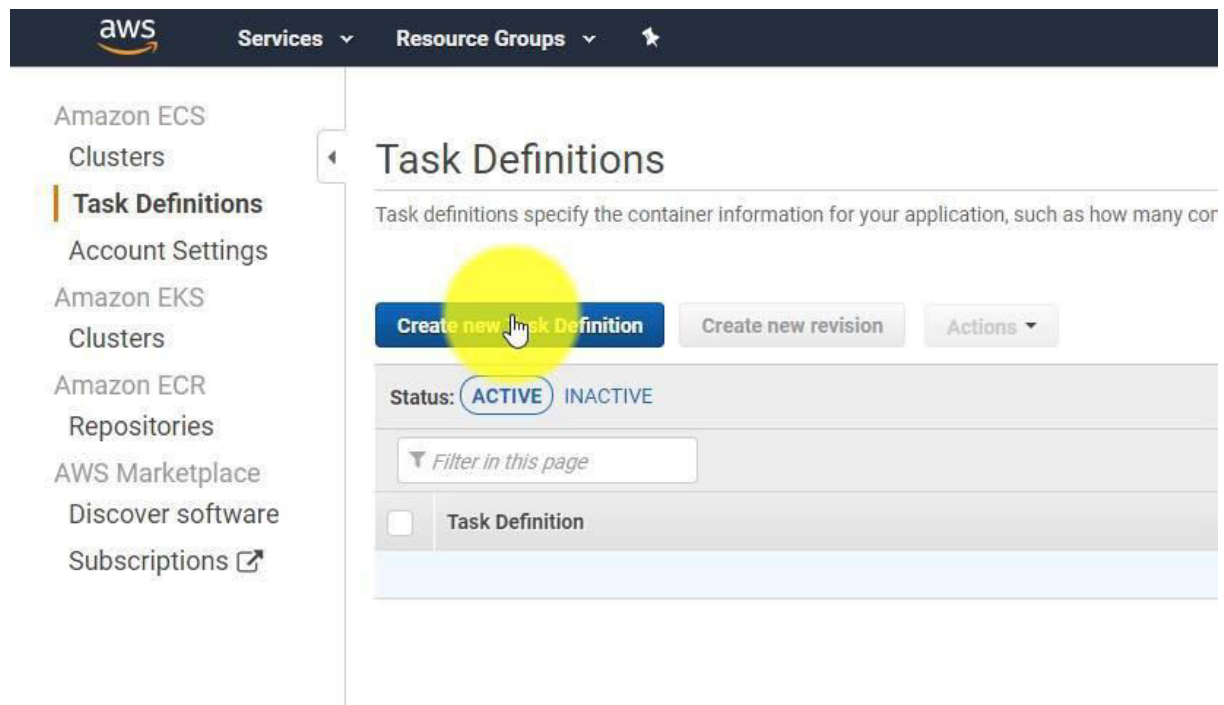
- An AWS Account

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*

simple-apache-server



Requires Compatibilities*

FARGATE

Task Role

None



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

awsvpc



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* ⓘ

Image* ⓘ

Private repository authentication* ☐ ⓘ

Memory Limits (MiB) Soft limit ▼ ⓘ

[+ 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	Protocol
<input type="text" value="80"/>	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** Tasks ECS Instances Metrics Scheduled Tasks Tags Capacity Providers

2 **Create** Update Delete Actions ▾

Filter in this page Launch type ALL Service type ALL

<input type="checkbox"/>	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"/> 46defbf8-9c98-4e98-96...	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	Desired count	2
Status	ACTIVE	Pending count	0
Task definition	simple-apache-server:1	Running count	2
Service type	REPLICA		
Launch type	FARGATE		
Platform version	LATEST(1.3.0)		
Service role	AWSServiceRoleForECS		

Details Tasks Events Auto Scaling Deployments Metrics Tags **Logs**

Task status **RUNNING** STOPPED

Filter logs % All 30s 5m 1h 6h 1d 1w Last

Timestamp (UTC+00:00)	Message	Task
2020-04-06 13:52:22	[Mon Apr 06 11:52:22.452993 2020] [mpm_event.notice] [pid 1:tid 140516142617728] AH00489: Apache/...	466efbbf-8c98-4e98-962a-c0c2d3a7b65a
2020-04-06 13:52:22	[Mon Apr 06 11:52:22.453184 2020] [core:notice] [pid 1:tid 140516142617728] AH00094: Command line: '...	466efbbf-8c98-4e98-962a-c0c2d3a7b65a
2020-04-06 13:52:19	[Mon Apr 06 11:52:19.344918 2020] [mpm_event.notice] [pid 1:tid 140650643309696] AH00489: Apache/...	8547aa12-a438-43f8-bbe8-8b056329db6a
2020-04-06 13:52:19	[Mon Apr 06 11:52:19.345085 2020] [core:notice] [pid 1:tid 140650643309696] AH00094: Command line: '...	8547aa12-a438-43f8-bbe8-8b056329db6a

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 REPLICAS
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

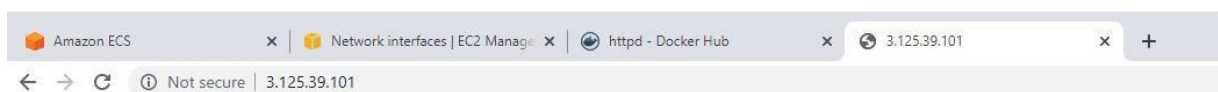
Cluster	myfargatecluster
Launch type	FARGATE
Platform version	1.3.0
Task definition	simple-apache-server:1
Group	service:apacheservice
Task role	None
Last status	RUNNING
Desired status	RUNNING
Created at	2020-04-06 13:51:48 +0200
Started at	2020-04-06 13:52:22 +0200

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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Clusters > myfargatecluster

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 | Scheduling

Run new Task | Actions

Desired task status: Running | **Stopped**

Filter in this page | Launch type: ALL | 1-2 | Page size: 50

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

Cancel Delete

Lab End
