

# DOCKER CONTAINERS

Deploy Docker Containers using AWS ECS(Elastic Container Service).

Amazon ECS (Elastic container service) is a web service which is used to run Docker applications on a scalable cluster.

Objective:

Run Docker sample application on Amazon ECS behind the load balancer and test the application.

## Step 1:

Set up Amazon ECS. Loginto Amazon ECS console and launch wizard in order to create the cluster and launch sample web application.

us-east-2.console.aws.amazon.com/ecs/home?region=us-east-2#/firstRun

aws Services Resource Groups

### Getting Started with Amazon Elastic Container Service (Amazon ECS) using Fargate

**Step 1: Container and Task**

- Step 2: Service
- Step 3: Cluster
- Step 4: Review

Diagram of ECS objects and how they relate

Container definition

Choose an image for your container below to get started quickly or define the container image to use.

Edit

Select the sample app option(screenshot below in order to choose an image for the container below.

### Container definition

Edit

Choose an image for your container below to get started quickly or define the container image to use.

<b>sample-app</b> image : httpd:2.4 memory : 0.5GB (512) cpu : 0.25 vCPU (256)	<b>nginx</b> image : nginx:latest memory : 0.5GB (512) cpu : 0.25 vCPU (256)
<b>tomcat-webserver</b> image : tomcat memory : 2GB (2048) cpu : 1 vCPU (1024)	<b>custom</b> image : -- memory : -- cpu : -- <button>Configure</button>

## Step 2:

Task definition creation:

Specify task definition in order for Amazon ECS to know details of Docker images(which docker images to be used, how many containers to use and the resource allocation for each of the resources etc.) As seen in the screenshot below review the preloaded values and select Next.

### Task definition

Edit

A task definition is a blueprint for your application, and describes one or more containers through attributes. Some attributes are configured at the task level but the majority of attributes are configured per container.

Task definition name	first-run-task-definition	i
Network mode	awsvpc	i
Task execution role	Create new	i
Compatibilities	FARGATE	i
Task memory	0.5GB (512)	
Task CPU	0.25 vCPU (256)	

\*Required

CancelNext

### Step3: Amazon ECS Service Configuration

Copies of task definitions in the cluster is launched and maintained by the Amazon ECS service. Amazon ECS will autorecover stopped tasks and maintain specified number of copies by running application as a service.

- In the screenshot below leave the service name provided by AWS(Hello world web based application provided by AWS that will run indefinitely as a service and will restart if it becomes unhealthy).
- The desired number of tasks be set to 1. Can be set to more than 1 if required.
- Amazon ECS gives the user the option to use an Elastic Load Balancer(ELB) in order to distribute traffic across the container instances that the task is launched on.
- Select the default values.
- In order to use the Amazon load balancer to an ECS service you must create an Identity and Access Management (IAM) role to use the services(make calls to EC2, register and deregister instances with load balancer etc.) Amazon will create an IAM role if none is available.

Service name sample-app-service

Number of desired tasks 1

Security group Automatically create new

Two security groups are created to secure your service: An Application Load Balancer security group that allows all traffic on the Application Load Balancer port and an Amazon ECS security group that allows all traffic ONLY from the Application Load Balancer security group. You can further configure security groups and network access outside of this wizard.

Load balancer type ☐ None  
☒ Application Load Balancer

Load balancer listener port 80

Load balancer listener protocol HTTP

\*Required

Cancel

Previous

Next

## Network access

If you do not use a load balancer, a security group is created to allow all public traffic to your service ONLY on the container port specified. If you use an Application Load Balancer, two security groups are created to secure your service: An Application Load Balancer security group that allows all traffic on the Application Load Balancer port and an Amazon ECS security group that allows all traffic ONLY from the Application Load Balancer security group. You can further configure security groups and network access outside of this wizard.

Security group\* Automatically create new

CIDR block

0.0.0.0/0

Changing this value affects which IP addresses can access your service.

Port range

80

## Elastic Load Balancing (optional)

An Elastic Load Balancing load balancer distributes incoming traffic across the tasks running in your service.

Load balancer type\* ☐ None  
☒ Application Load Balancer

Allows containers to use dynamic host  
port mapping (multiple tasks allowed per

Load balancer with rule-based routing  
and paths.

## Container to load balance

sample-app : 80

**Load balancer listener port\***

**Load balancer listener protocol\*** HTTP  
Outside the first-run wizard, you can select a certificate to use HTTPS.

▼ Advanced

**Health check path\***  ⓘ

**Application Load Balancer target group\*** Automatically create new  
A target group is created that maps your listener to an instance.

## Step 4: Cluster Configuration

### Configure your cluster

The infrastructure in a Fargate cluster is fully managed by AWS. Your containers run without you managing and configuring individual Amazon EC2 instances.

To see key differences between Fargate and standard ECS clusters, see the [Amazon ECS documentation](#).

**Cluster name**   
Cluster names are unique per account per region. Up to 255 letters (uppercase and lowercase), numbers, and hyphens are allowed.

**VPC ID** Automatically create new ⓘ

**Subnets** Automatically create new ⓘ

\*Required

[Cancel](#)

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## Step5: Review and Launch

So far, task definitions have been configured, Amazon ECS service which launches and maintains copies of task definitions and cluster which is a set of container instances running the container agent have all been configured.

- There will be a final chance to review task definition, task and cluster configuration before launching.
- Select Review and Launch instances.

## Review

Review the configuration you've set up before creating your task definition, service, and cluster.

### Task definition

[Edit](#)

Task definition name first-run-task-definition

Network mode awsvpc

Task execution role Create new

Container name sample-app

Image httpd:2.4

Memory 512

Port 80

Protocol HTTP

### Service

[Edit](#)

Service name sample-app-service

Number of desired tasks 1

Load balancer listener port 80

Load balancer listener protocol HTTP

Port 80

Protocol HTTP

Service

Edit

Service name sample-app-service

Number of desired tasks 1

Load balancer listener port 80

Load balancer listener protocol HTTP

Cluster

Edit

Cluster name default

VPC ID Automatically create new

Subnets Automatically create new

\*Required

Cancel

Previous

Create

Launch Status service page will display all the details.

Select View service after the launch service task has been completed in order to view the details.

## Getting Started with Amazon Elastic Container Service (Amazon ECS) using Fargate

### Launch Status

We are creating resources for your service. This may take up to 10 minutes. When we're complete, you can view your service.

[Back](#)
[View service](#)

### Additional features that you can add to your service after creation

#### Scale based on metrics

You can configure scaling rules based on CloudWatch metrics

Preparing service : 10 of 10 complete

<b>ECS resource creation</b>	complete	✓
Cluster default	complete	✓
Task definition first-run-task-definition:1	complete	✓
Service sample-app-service	complete	✓
<b>Additional AWS service integrations</b>	complete	✓
Log group /ecs/first-run-task-definition	complete	✓
CloudFormation stack EC2ContainerService-default	complete	✓
VPC vpc-0c77e6462ed13c64c	complete	✓
Subnet 1 subnet-08f84a8b4bfe84c28	complete	✓
Subnet 2 subnet-06258fe46ee893516	complete	✓
Security group sg-052eab0c32de679f7	complete	✓
Load balancer arn:aws:elasticloadbalancing:us-east-2:436050113826:loadbalancer/app/EC2Co-EcsEL-PRZJG0ICTIOM/f2269f1b6e19bade	complete	✓

Services ▾ Resource Groups ▾ ⭐

Clusters > default > Service: sample-app-service

## Service : sample-app-service Update

Cluster [default](#) Desired count 1

Status **ACTIVE** Pending count 0

Task definition [first-run-task-definition:1](#) Running count 1

Service type REPLICAS

Launch type FARGATE

Platform version LATEST(1.3.0)

Service role [AWSServiceRoleForECS](#)

Details Tasks Events Auto Scaling Deployments Metrics Tags Logs

### Load Balancing

Target Group Name	Container Name	Container Port
<a href="#">EC2Co-Defau-19113SO76C04J</a>	sample-app	80

### Network Access

Health check grace period 0

Allowed VPC [vpc-0c77e6462ed13c64c](#)

Allowed subnets [subnet-08f84a8b4bfe84c28](#), [subnet-06258fe46ee893516](#)

Security groups\* [sg-052eab0c32de679f7](#)

Auto-assign public IP ENABLED

Step 6:

Open the sample application and select the load balancer.

Services ▾ Resource Groups ▾ ⭐

[Create target group](#) Actions ▾

search: [arn:aws:elasticloadbalancing:us-east-2:...](#) Add filter

Name	Port	Protocol	Target type	Load Balanc	VPC ID	Monitoring
<a href="#">EC2Co-Defau-19113SO76C...</a>	80	HTTP	ip	<a href="#">EC2Co-Ec...</a>	<a href="#">vpc-0c77e6462ed13c64c</a>	<input checked="" type="checkbox"/>

Target group: [EC2Co-Defau-19113SO76C04J](#)

Description Targets Health checks Monitoring Tags

### Basic Configuration

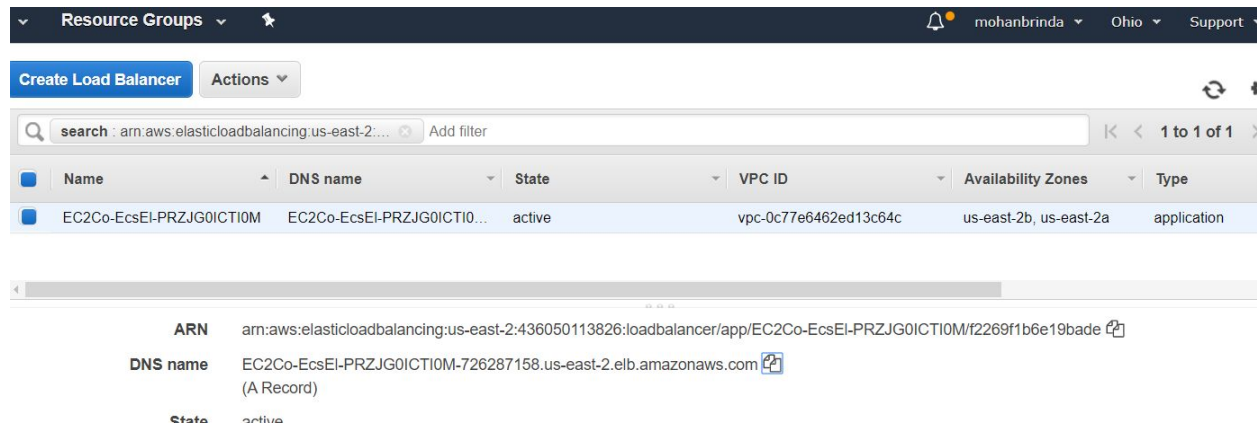
Name ⓘ [EC2Co-Defau-19113SO76C04J](#)

ARN ⓘ [arn:aws:elasticloadbalancing:us-east-2:436050113826:targetgroup/EC2Co-Defau-19113SO76C04J/3b9c45ea92410975](#)

Step7: Test the sample application



Copy the DNS name and paste in a separate browser  
Select the DNS name and paste in in the browser



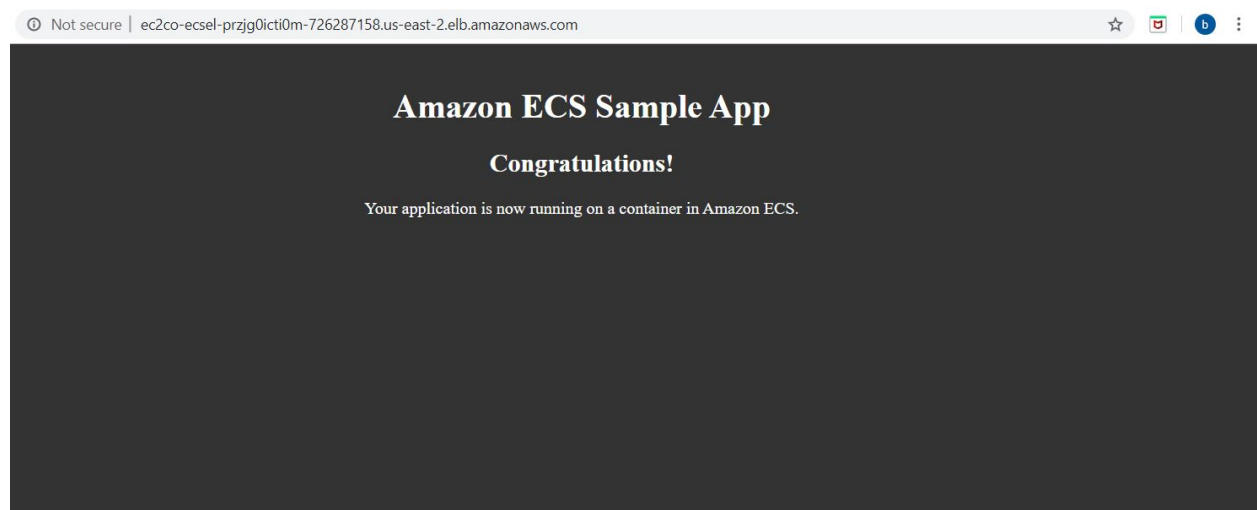
The screenshot shows the AWS Management Console interface. At the top, there's a navigation bar with 'Resource Groups', a search icon, and user information 'mohanbrinda' in 'Ohio'. Below this is a 'Create Load Balancer' button and an 'Actions' dropdown. A search bar contains the text 'arn:aws:elasticloadbalancing:us-east-2:...'. Below the search bar is a table with one row of resource details. Below the table, the details for the selected resource are shown in a key-value format.

Name	DNS name	State	VPC ID	Availability Zones	Type
EC2Co-EcsEl-PRZJG0ICTI0M	EC2Co-EcsEl-PRZJG0ICTI0...	active	vpc-0c77e6462ed13c64c	us-east-2b, us-east-2a	application

ARN	arn:aws:elasticloadbalancing:us-east-2:436050113826:loadbalancer/app/EC2Co-EcsEl-PRZJG0ICTI0M/f2269f1b6e19bade
DNS name	EC2Co-EcsEl-PRZJG0ICTI0M-726287158.us-east-2.elb.amazonaws.com (A Record)
State	active

Web Browser(see screenshot below)



Step7: Delete the resources

Delete the resources created so far(Amazon ec2 instances, Load balancer, ECS cluster).  
On the AMazon ECS console, select the console name, select sample-app and select update(see screenshots below).  
Ensure all the tasks have been stopped before Amazon ECS will delete the service.  
Set the number of tasks to 0. Update the service before deleting the service.  
Also, delete the Amazon ec2 instances associated as well as the load balancers.

1 (latest) ▼

Platform version LATEST ▼ ⓘ

Force new deployment ☐ ⓘ

Cluster default ▼ ⓘ

Service name sample-app-service ▼ ⓘ

Service type\* REPLICA ⓘ

Number of tasks 0 ⓘ

Minimum healthy percent 100 ⓘ

Maximum percent 200 ⓘ

## Delete Service



Are you sure you want to delete the service sample-app-service? If the service is not scaled down to 0, it will be scaled down before it is deleted.



### Load Balancing resources found

Deleting the service does not affect Elastic Load Balancing resources associated with the service. The following target group is associated with the service:

- [EC2Co-Defau-19I13SO76C04J](#)

Enter the phrase "delete me" into the field below to confirm deletion.

Cancel

Delete

Delete Cluster

Deleting the cluster also deletes the CloudFormation stack [EC2ContainerService-default](#).

Are you sure you want to delete the cluster **default** and all the ECS resources within it?

Enter the phrase "delete me" into the field below to confirm deletion.

delete me

Cancel

Delete

## Deregister tasks

console.aws.amazon.com/ecs/home?region=us-east-2#/taskDefinitions/first-run-task-definition

Resource Groups

mohanbrinda

Task Definitions

first-run-task-definition

Task Definition Name : first-run-task-definition

Select a revision for more details

Create new revision

Actions

Last updated on October 25, 2019 12:39:01 PM

Status: **Active** Inactive

Filter in this page

< 1-1 >

<input type="checkbox"/>	Task Definition Name : Revision	Status
<input type="checkbox"/>	first-run-task-definition:1	Active



Task Definitions > first-run-task-definition > 1

## Task Definition: first-run-task-definition:1 (INACTIVE)

View detailed information for your task definition. To modify the task definition, you need to create a new revision and then make the required changes to the task definition

Create new revision

Builder IAM Task