

Project 1 - Deploying a Multi-Tier Website Using AWS EC2

Topic: Deploy a Multi-tier website using EC2

Description: Amazon Elastic Compute Cloud (Amazon EC2) provides scalable computing capacity in the Amazon Web Services (AWS) cloud. Using Amazon EC2 eliminates your need to invest in hardware up front, so you can develop and deploy applications faster. You can use Amazon EC2 to launch as many or as few virtual servers as you need, configure security and networking, and manage storage. Amazon EC2 enables you to scale up or down to handle changes in requirements or spikes in popularity, reducing your need to forecast traffic.

Problem Statement:

Company ABC wants to move their product to AWS. They have the following things setup right now:

1. MySQL DB
2. Website (PHP)

The company wants high availability on this product, therefore wants autoscaling to be enabled on this website.

Solution:

Created an Ubuntu EC2 instance, installed php and mysql client on it.

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IPv4)	IPv4 Public IP	IPv6 IPs
AWS-Project	i-0298439ef6e93fb44	t2.micro	us-east-1c	running	Initializing	None	ec2-52-201-222-129.co...	52.201.222.129	-

Instance: i-0298439ef6e93fb44 (AWS-Project)		Public DNS: ec2-52-201-222-129.compute-1.amazonaws.com	
Description	Status Checks	Monitoring	Tags
Instance ID	i-0298439ef6e93fb44	Public DNS (IPv4)	ec2-52-201-222-129.compute-1.amazonaws.com
Instance state	running	IPv4 Public IP	52.201.222.129
Instance type	t2.micro	IPv6 IPs	-
Finding	Opt-in to AWS Compute Optimizer for recommendations. Learn more	Elastic IPs	-
Private DNS	ip-172-31-89-138.ec2.internal	Availability zone	us-east-1c
Private IPs	172.31.89.138	Security groups	default. view inbound rules . view outbound rules
Secondary private IPs	-	Scheduled events	No scheduled events
VPC ID	vpc-01c30b93620ba0d46 (default_VPC)	AMI ID	ubuntu/images/hvm-ssd/ubuntu-focal-20.04-amd64-server-20220610 (ami-08d4ac5b634553e16)
Platform	Ubuntu	Subnet ID	subnet-0c06348a3cc5c0855
Platform details	Linux/UNIX	Network interfaces	eth0
Usage operation	RunInstances	IAM role	-

```
#!/bin/bash
sudo apt-get update -y
sudo apt-get install apache2 -y
sudo add-apt-repository -y ppa:ondrej/php
sudo apt install php5.6 mysql-client php5.6-mysqli -y
```

Created a RDS database.

RDS > Databases										
Databases Group resources Modify Actions Restore from S3 Create database										
<input type="text" value="Filter by databases"/>										
	DB identifier	Role	Engine	Region & AZ	Size	Status	CPU	Current activity	Maintenance	VPC
	intellipaadb	Instance	MySQL Community	-	db.t2.micro	Creating	-	none	none	vpc-01c30b93620ba0d46

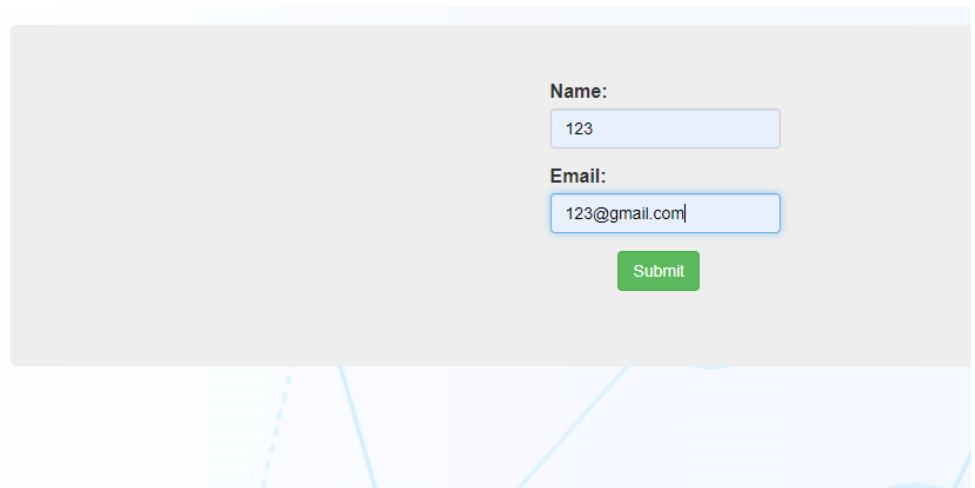
Using filezilla copy the code to Ec2 instance.

```
ubuntu@ip-172-31-89-54:~/new$ ls
images  index.php
ubuntu@ip-172-31-89-54:~/new$
```

Created a table data.

```
CREATE TABLE data (
  firstname varchar(255),
  email varchar(255)
);
```

Tested the website:



The screenshot shows a web form with two input fields: "Name:" containing "123" and "Email:" containing "123@gmail.com". Below the fields is a green "Submit" button. At the bottom left of the form area, a message reads "New record created successfully".

Checked the table and data has been added in data table.

```
mysql> select * from data;
+-----+-----+
| firstname | email          |
+-----+-----+
| 123       | 123@gmail.com |
+-----+-----+
1 row in set (0.00 sec)

mysql>
```

Created an AMI for the EC2 machine that we have configured.

Owned by me	Filter by tags and attributes or search by keyword										
	Name	AMI Name	AMI ID	Source	Owner	Visibility	Status	Creation Date	Platform	Root Device 1	Virtualization
	Webserver		ami-03e80bc3e4662c36c	834840168502/...	834840168502	Private	available	July 13, 2022 at 5:45:33 PM ...	Other Linux	ebs	hvm

Created a Launch configuration:

Launch configurations (1) Info						Actions	Copy to launch template	Create launch configuration
Search launch configurations						< 1 > ⚙		
	Name	AMI ID	Instance type	Spot price	Creation time			
	AWSproject1	ami-03e80bc3e4...	t2.micro	-	Wed Jul 13 2022 18:07:56 GMT+0530 (India Standard Time)			

Created an Application Load balancer:

Filter by tags and attributes or search by keyword									
	Name	DNS name	State	VPC ID	Availability Zones	Type	Created At	Monitoring	
	AWSproject1SG-1	AWSproject1SG-1-1354593...	Active	vpc-01c30b93620ba0d46	us-east-1d, us-east-1f, ...	application	July 13, 2022 at 6:36:35 PM ...		

Created Auto scaling group to make the website highly available:

EC2 > Auto Scaling groups > AWSproject1SG

Details

Activity

Automatic scaling

Instance management

Monitoring

Instance refresh

Group details

Edit

Desired capacity	Auto Scaling group name	
2	AWSproject1SG	
Minimum capacity	Date created	
2	Wed Jul 13 2022 18:36:34 GMT+0530 (India Standard Time)	
Maximum capacity	Amazon Resource Name (ARN)	
3	arn:aws:autoscaling:us-east-1:834840168502:autoScalingGroup:63a85462-6128-4923-a1cd-fb03d28efff1:autoScalingGroupName/AWSproject1SG	

Launch configuration

Edit

Launch configuration	AMI ID	Security groups
AWSproject1	ami-03e80bc3e4662c36c	sg-03bbe7549f56c0b02
Instance type	Key pair name	Create time
t2.micro	AWSproject	Wed Jul 13 2022 18:07:56 GMT+0530 (India Standard Time)
Storage (volumes)		
/dev/sda1		

View details in the launch configuration console

Tested the website using the DNS name of Load balancer:

⚠ Not secure | awsproject1sg-1-1354593526.us-east-1.elb.amazonaws.com

Name:

Email:

Value is added to the table.

```
Database changed
mysql> select * from data;
+-----+-----+
| firstname | email |
+-----+-----+
| 123       | 123@gmail.com |
| VPC       | vpc@gmail.com |
+-----+-----+
2 rows in set (0.00 sec)

mysql>
```