

Project - 1: Deploying a Multi-Tier Website using AWS 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 set up right now:

1. MySQL DB
2. Website (PHP) The company wants high availability on this product, therefore wants Auto Scaling to be enabled on this website.

Steps To Solve:

1. Launch an EC2 Instance
2. Enable Auto Scaling on these instances (minimum 2)
3. Create an RDS Instance
4. Create Database & Table in RDS instance:
 - a. Database name: intel
 - b. Table name: data
- c. Database password: intel123
5. Change hostname in website
6. Allow traffic from EC2 to RDS instance
7. Allow all-traffic to EC2 instance

1. launched a instance:

aws [Search] [Alt+S] United States (N. Virginia) Nandhakumar

EC2 > Security Groups > sg-042a8c56d846be7d0 - ABCSecurityGroup

Dashboard EC2 Global View Events

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Instances (1/3) Info

Last updated 17 minutes ago [Connect](#) [Instance state](#) [Actions](#) [Launch instances](#)

Find instance by attribute or tag (case-sensitive) All states

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Pub
<input checked="" type="checkbox"/>	ABC-WebServer	i-0cbc512c8e116d9d2	Running	t2.micro	2/2 checks passed	View alarms	us-east-1c	ec2
<input type="checkbox"/>		i-0ffe6564100ee7415	Running	t2.micro	2/2 checks passed	View alarms	us-east-1a	ec2
<input type="checkbox"/>		i-014ea220f258066cc	Running	t2.micro	2/2 checks passed	View alarms	us-east-1a	ec2

i-0cbc512c8e116d9d2 (ABC-WebServer)

[Details](#) [Status and alarms](#) [Monitoring](#) [Security](#) [Networking](#) [Storage](#) [Tags](#)

▼ Instance summary Info

Instance ID i-0cbc512c8e116d9d2	Public IPv4 address 3.95.205.32 open address	Private IPv4 addresses 172.31.18.168
IPv6 address -	Instance state Running	Public IPv4 DNS ec2-3-95-205-32.compute-1.amazonaws.com open address
Hostname type IP name: ip-172-31-18-168.ec2.internal	Private IP DNS name (IPv4 only) ip-172-31-18-168.ec2.internal	

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2A. launch template created:

aws [Search] [Alt+S] United States (N. Virginia) Nandhakumar

EC2 > Launch templates > ABCLaunchTemplate

Dashboard EC2 Global View Events

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ABCLaunchTemplate (lt-01eab289af8a3bcf2)

[Actions](#) [Delete template](#)

Launch template details

Launch template ID lt-01eab289af8a3bcf2	Launch template name ABCLaunchTemplate	Default version 1	Owner arn:aws:iam::140023376730:root
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[Details](#) [Versions](#) [Template tags](#)

Launch template version details

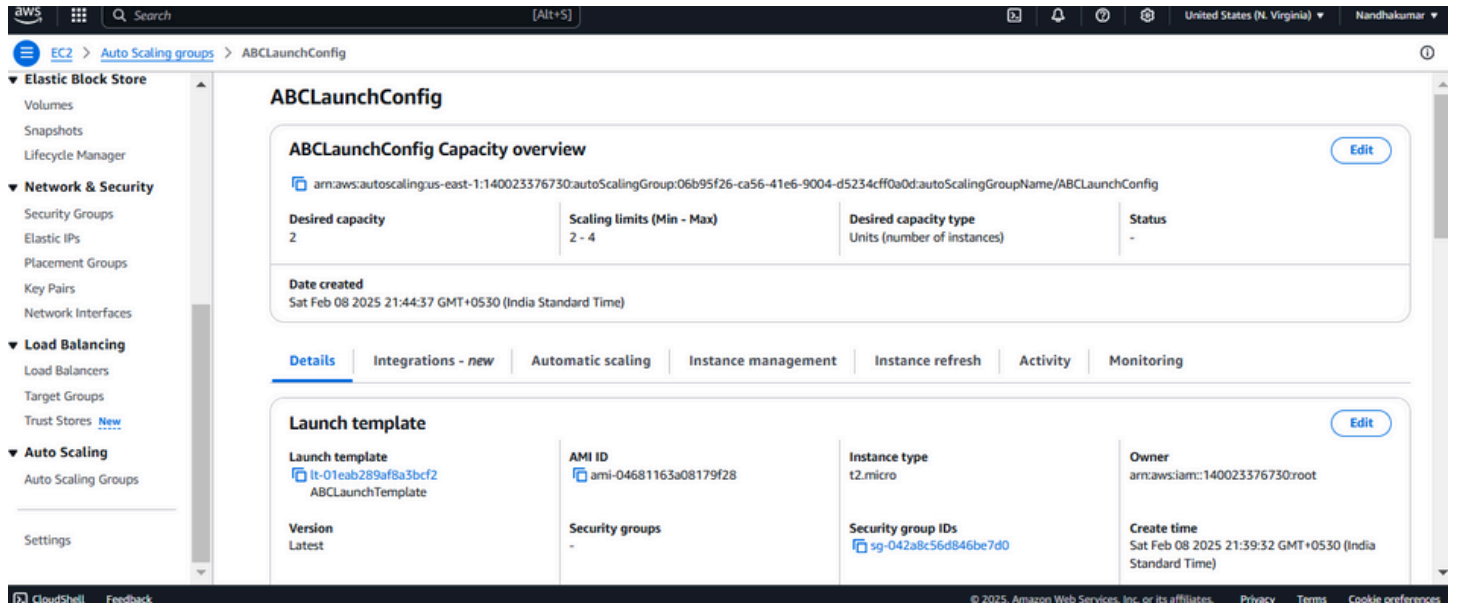
[Actions](#) [Delete template version](#)

Version 1 (Default)	Description Provide a description for this version.	Date created 2025-02-08T16:09:32.000Z	Created by arn:aws:iam::140023376730:root
------------------------	--	--	--

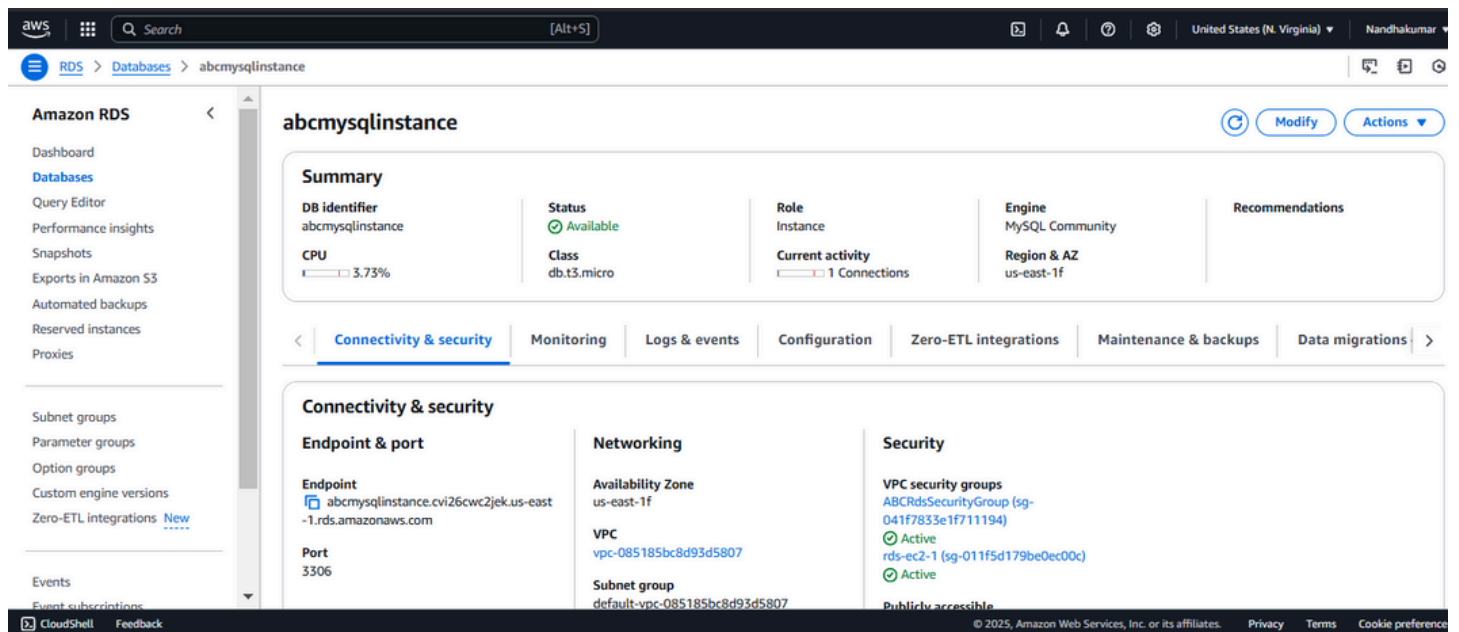
[Instance details](#) [Storage](#) [Resource tags](#) [Network interfaces](#) [Advanced details](#)

AMI ID ami-04681163a08179f28	Instance type t2.micro	Availability Zone -	Key pair name ADC-webserver
Security groups -	Security group IDs sg-042a8c56d846be7d0		

2.B. created auto scaling group:



3. Create an RDS Instance



4. Create Database & Table in RDS instance:

a. Database name: intel

b. Table name: data

```
ec2-user@ip-172-31-18- x + v
Your MySQL connection id is 33
Server version: 8.0.40 Source distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

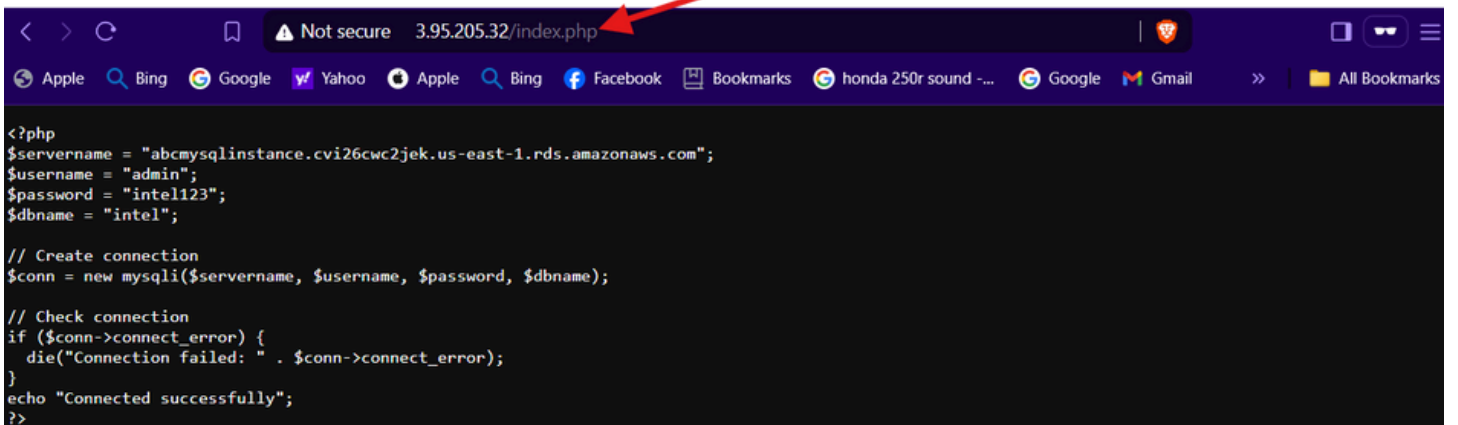
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MySQL [(none)]> CREATE DATABASE intel;
ERROR 1007 (HY000): Can't create database 'intel'; database exists
MySQL [(none)]> USE intel;
Database changed
MySQL [intel]> CREATE TABLE data (
  -> id INT AUTO_INCREMENT PRIMARY KEY,
  -> name VARCHAR(255) NOT NULL,
  -> value VARCHAR(255) NOT NULL
  -> );
Query OK, 0 rows affected (0.20 sec)

MySQL [intel]> SHOW TABLES;
+-----+
| Tables_in_intel |
+-----+
| data             |
+-----+
1 row in set (0.00 sec)

MySQL [intel]>
```

5. Change hostname in website



```
<?php
$servername = "abcmysqlinstance.cvi26cwc2jek.us-east-1.rds.amazonaws.com";
$username = "admin";
$password = "intel123";
$dbname = "intel";

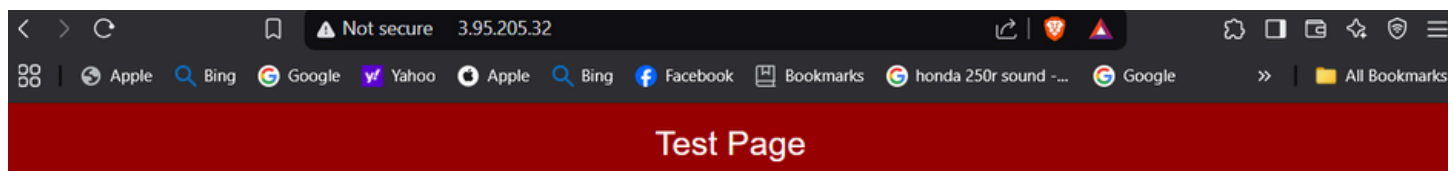
// Create connection
$conn = new mysqli($servername, $username, $password, $dbname);

// Check connection
if ($conn->connect_error) {
    die("Connection failed: " . $conn->connect_error);
}
echo "Connected successfully";
?>
```

6. Allow traffic from EC2 to RDS instance

```
ec2-user@ip-172-31-18-~ × + ▾  
Bye  
[ec2-user@ip-172-31-18-168 ~]$ cd /var/www/html/  
[ec2-user@ip-172-31-18-168 html]$ sudo nano index.php  
[ec2-user@ip-172-31-18-168 html]$ client_loop: send disconnect: Connection reset  
  
C:\Users\harip\Desktop\intellipaath (24-09-2024)\AWS\assignments\project 1\key pair>ssh -i "ADC-webserver.pem" ec2-user@3  
.95.205.32  
Last login: Sat Feb 8 16:59:23 2025 from 152.59.218.202  
  
#_ _  
~\ ##### Amazon Linux 2  
~~~ \#####  
~~~~ \###| AL2 End of Life is 2026-06-30.  
~~~~ \#/ ---  
~~~~ V~' ^-->  
~~~~  
~~~~ _./ ./ / A newer version of Amazon Linux is available!  
~~~~ _/_/ /  
~~~~ _/m/' https://aws.amazon.com/linux/amazon-linux-2023/  
  
[ec2-user@ip-172-31-18-168 ~]$ mysql -h abcmysqlinstance.cvi26cwc2jek.us-east-1.rds.amazonaws.com -u admin -p  
Enter password:  
Welcome to the MariaDB monitor. Commands end with ; or \g.  
Your MySQL connection id is 37  
Server version: 8.0.40 Source distribution  
  
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.  
  
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.  
  
MySQL [(none)]>
```

7. Allow all-traffic to EC2 instance



This page is used to test the proper operation of the Apache HTTP server after it has been installed. If you can read this page, it means that the Apache HTTP server installed at this site is working properly.

If you are a member of the general public:

The fact that you are seeing this page indicates that the website you just visited is either experiencing problems, or is undergoing routine maintenance.

If you would like to let the administrators of this website know that you've seen this page instead of the page you expected, you should send them e-mail. In general, mail sent to the name "webmaster" and directed to the website's domain should reach the appropriate person.

For example, if you experienced problems while visiting www.example.com, you should send e-mail to "webmaster@example.com".

If you are the website administrator:

You may now add content to the directory `/var/www/html/`. Note that until you do so, people visiting your website will see this page, and not your content. To prevent this page from ever being used, follow the instructions in the file `/etc/httpd/conf.d/welcome.conf`.

You are free to use the image below on web sites powered by the Apache HTTP Server:

