

Project- 1: Deploying a Mufti-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

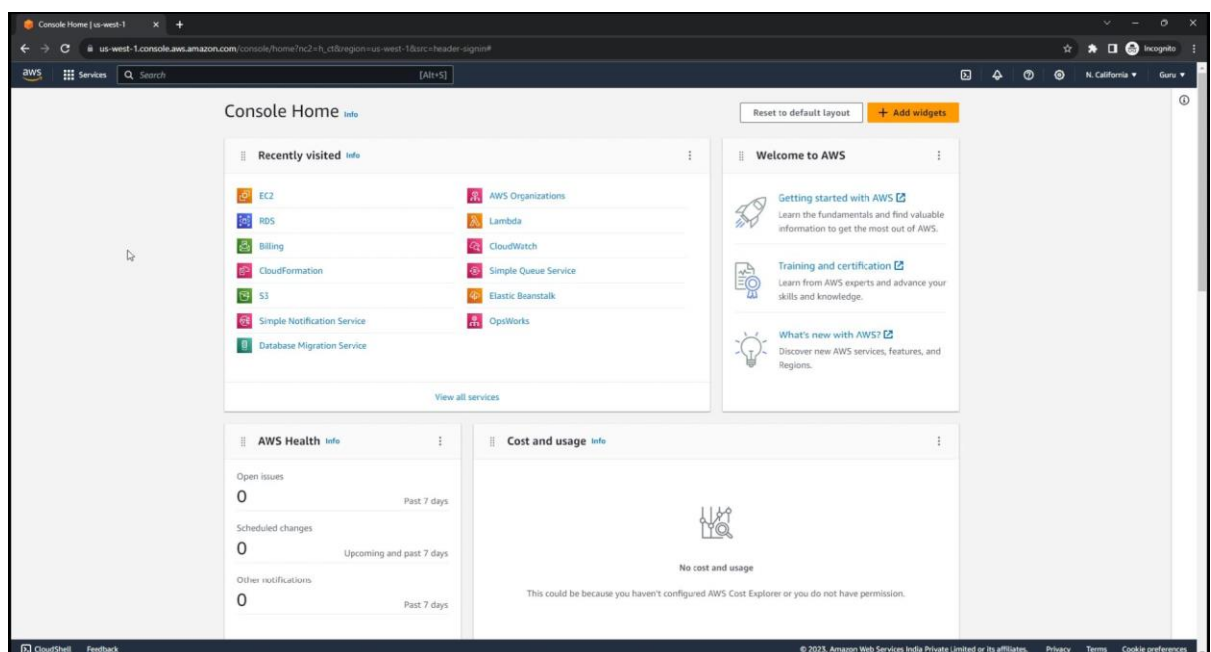
- MySQL DB
- Website (PHP)

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

Steps To Solve:

- Launch an EC2 Instance
- Enable Auto Scaling on these instances (minimum 2)
- Create an RDS Instance
- Create Database & Table in RDS instance:
 - Database name: intel
 - Table name: data
 - Database password: intel123
- Change hostname in website
- Allow traffic from EC2 to RDS instance
- Allow all-traffic to EC2 instance

The Task:



Launch an instance | EC2 | us-west-1

us-west-1.console.aws.amazon.com/ec2/home?region=us-west-1#LaunchInstances

Launch an instance

Name and tags

Name

Project_1

Add additional tags

Application and OS Images (Amazon Machine Image)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below.

Search our full catalog including 1000s of application and OS images

Recents

Quick Start

Amazon Linux

Ubuntu

Windows

Red Hat

SUSE Linux

Debian

Browse more AMIs

Including AMIs from AWS, Marketplace and the Community.

Amazon Machine Image (AMI)

Amazon Linux 2023 AMI

ami-06d2c1b5d3ae9f1

Virtualization: hvm

ENX enabled: true

Root device type: ebs

Free tier eligible

Summary

Number of instances

1

Software image (AMI)

Amazon Linux 2023 AMI 2023.2.2...read more

ami-06d2c1b5d3ae9f1

Virtual server type (instance type)

t2.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 50 GiB of EBS storage, 2 million I/Os, 1 GiB of snapshots, and 100 GiB of bandwidth to the internet.

Cancel

Launch instance

Review commands

Create Auto Scaling group | EC2 | us-west-1

us-west-1.console.aws.amazon.com/ec2/home?region=us-west-1#CreateAutoScalingGroup

Create Auto Scaling group

Step 1: Choose launch template

Step 2: Choose instance launch options

Step 3 - optional: Configure advanced options

Step 4 - optional: Configure group size and scaling policies

Step 5 - optional: Add notifications

Step 6 - optional: Add tags

Step 7: Review

Choose launch template

Specify a launch template that contains settings common to all EC2 instances that are launched by this Auto Scaling group.

Name

Auto Scaling group name

Enter a name to identify the group.

Project-1

Must be unique to this account in the current Region and no more than 255 characters.

Launch template

For accounts created after May 31, 2023, the EC2 console only supports creating Auto Scaling groups with launch templates. Creating Auto Scaling groups with launch configurations is not recommended but still available via the CLI and API until December 31, 2023.

Launch template

Choose a launch template that contains the instance-level settings, such as the Amazon Machine Image (AMI), instance type, key pair, and security groups.

Select a launch template

Create a launch template

Cancel

Next

Create Auto Scaling group | EC2 | us-west-1

us-west-1.console.aws.amazon.com/ec2/home?region=us-west-1#CreateAutoScalingGroup

Create Auto Scaling group

Units

Scaling policy

No scaling policy

Instance scale-in protection

Instance scale-in protection

Enable instance protection from scale in

Step 5: Add notifications

Notifications

No notifications

Step 6: Add tags

Tags (0)

Key	Value	Tag new instances
No tags		

Cancel

Previous

Create Auto Scaling group

```
Connect to instance | EC2 | us-west-1 x EC2 Instance Connect | us-west-1 x
us-west-1.console.aws.amazon.com/ec2-instance-connect/sh?tokenType=standard&instanceId=i-0ac6283877cd812f&osUser=ubuntu&region=us-west-1&sshPort=22#/

Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 5.19.0-1025-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

System information as of Sun Sep 24 04:25:58 UTC 2023

System load: 0.00341796875 Processes: 100
Usage of /: 20.6% of 7.57GB Users logged in: 0
Memory usage: 24% IPv4 address for eth0: 172.31.26.249
Swap usage: 0%

Expanded Security Maintenance for Applications is not enabled.
0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo apt update

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-26-249:~$
```

Create database

Choose a database creation method

☒ Standard create

You set all of the configuration options, including ones for availability, security, backups, and maintenance.

☐ Easy create

You use recommended best-practice configurations. Some configuration options can be changed after the database is created.

Engine options

Engine type

☐ Aurora (MySQL Compatible)

☐ Aurora (PostgreSQL Compatible)

☒ MySQL

☐ MariaDB

☐ PostgreSQL

☐ Oracle

☐ Microsoft SQL Server

MySQL

MySQL is the most popular open source database in the world. MySQL on RDS offers the rich features of the MySQL community edition with the flexibility to easily scale compute resources or storage capacity for your database.

- Supports database size up to 64 TiB.
- Supports General Purpose, Memory Optimized, and Burstable Performance instance classes.
- Supports automated backup and point-in-time recovery.
- Supports up to 15 Read Replicas per instance, within a single Region or 5 read replicas cross-region.

Amazon RDS

- Dashboard
- Databases
- Query Editor
- Performance insights
- Snapshots
- Exports in Amazon S3
- Automated backups
- Reserved instances
- Proxies
- Subnet groups
- Parameter groups
- Option groups
- Events
- Event subscriptions
- Recommendations
- Certificate updates

Creating database database-1

Your database might take a few minutes to launch. You can use settings from database-1 to simplify configuration of suggested database add-ons while we finish creating your DB for you.

Introducing Aurora I/O-Optimized

Aurora's I/O-Optimized is a new cluster storage configuration that offers predictable pricing for all applications and improved price-performance, with up to 40% costs savings for I/O-intensive applications.

Consider creating a Blue/Green Deployment to minimize downtime during upgrades

You may want to consider using Amazon RDS Blue/Green Deployments and minimize your downtime during upgrades. A Blue/Green Deployment provides a staging environment for changes to production databases. [RDS User Guide](#)

[Guide](#) [Aurora User Guide](#)

Databases (1)

Filter by databases

DB identifier	Status	Role	Engine	Region & AZ	Size	Actions	CPU	Current activity	Maintenance	VPC
database-1	Creating	Instance	MySQL Community	-	db.m5g.large	-	-	-	none	vpc-0ca59fb9500e6d32

```
Connect to instance | EC2 | us-west-1 | RDS | us-west-1 | EC2 Instance Connect | us-west-1 | Login
us-west-1.console.aws.amazon.com/ec2-instance-connect/sh?connType=standard&instanceId=i-0ac6283877cd812f2&hostUser=ubuntu&region=us-west-1&sshPort=22#/?

AWS Services Search [Alt+S]

Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 5.19.0-1025-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Sun Sep 24 04:40:57 UTC 2023

System load: 0.03271484375 Processes: 106
Usage of /: 36.2% of 7.57GB Users logged in: 0
Memory usage: 64% IPv4 address for eth0: 172.31.26.249
Swap usage: 0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

2 additional security updates can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm

*** System restart required ***
Last login: Sun Sep 24 04:31:06 2023 from 13.22.6.116
ubuntu@ip-172-31-26-249:~$ cd /var/www/
ubuntu@ip-172-31-26-249:/var/www$ sudo mkdir project1
ubuntu@ip-172-31-26-249:/var/www$ cd project1/
ubuntu@ip-172-31-26-249:/var/www/project1$ sudo touch login.php
ubuntu@ip-172-31-26-249:/var/www/project1$ sudo vim login_process.php
ubuntu@ip-172-31-26-249:/var/www/project1$ sudo vim login_process.php
ubuntu@ip-172-31-26-249:/var/www/project1$ sudo vim db_config.php
ubuntu@ip-172-31-26-249:/var/www/project1$ sudo vim dashboard.html
ubuntu@ip-172-31-26-249:/var/www/project1$ sudo vim logout.php
ubuntu@ip-172-31-26-249:/var/www/project1$ sudo vim /etc/apache2/sites-available/000-default.conf
```

i-0ac6283877cd812f2 (Project_1)
PublicIPs: 50.18.19.227 PrivateIPs: 172.31.26.249

Amazon RDS

Database-1

Summary

DB identifier database-1	CPU 2.41%	Status Configuring enhanced-monitoring	Class db.m6g.large
Role Instance	Current activity	Engine MySQL Community	Region & AZ us-west-1a

Connectivity & security

Endpoint & port Endpoint database-1.cwtjfdclpp0u.us-west-1.rds.amazonaws.com Port 3306	Networking Availability Zone us-west-1a VPC vpc-0c4a59fb9500e6d32 Subnet group default-vpc-0c4a59fb9500e6d32 Subnets subnet-000803f1a48d5d2de subnet-0f5ed9087b24fb3 Network type IPv4	Security VPC security groups default (sg-07b18cb052c8bfa0c) Active Publicly accessible Yes Certificate authority rds-ca-2019 Certificate authority date August 22, 2024, 22:38 [UTC+05:30] DB instance certificate expiration date August 22, 2024, 22:38 [UTC+05:30]
--	---	--

```
Instance details | EC2 | us-west-1 | RDS | us-west-1 | EC2 Instance Connect | us-west-1 | Login
us-west-1.console.aws.amazon.com/rds/home?region=us-west-1&databaseId=database-1&cluster=fa1setab+connectivity

AWS Services Search [Alt+S]

ubuntu@ip-172-31-26-249:/var/www/project1$ mysql -h database-1.cwtjfdclpp0u.us-west-1.rds.amazonaws.com -u admin -p
Enter password:
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 24
Server version: 8.0.33 Source distribution

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affiliates. Other names may be trademarks of their respective
owners.

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

mysql> SHOW DATABASES;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+
4 rows in set (0.00 sec)

mysql>
mysql> CREATE DATABASE intel;
Query OK, 1 row affected (0.01 sec)

mysql>
```

i-0ac6283877cd812f2 (Project_1)
PublicIPs: 50.18.19.227 PrivateIPs: 172.31.26.249

Instance details | EC2 | us-west-1 | RDS | us-west-1 | EC2 Instance Connect | us-west-1 | Login

us-west-1.console.aws.amazon.com/ec2-instance-connect/sh?rosenType=standard&instanceId=i-0ac6283877cd812f8&sshUser=ubuntu®ion=us-west-1&sshPort=22#/

RDS Services Search [Alt+S]

```
i>mysql> USE inteli;
Database changed
mysql> CREATE TABLE data (
  -> employee_id INT AUTO INCREMENT PRIMARY KEY,
  -> position VARCHAR(255),
  -> username VARCHAR(255),
  -> password VARCHAR(255)
  -> );
Query OK, 0 rows affected (0.05 sec)

mysql>
mysql>
mysql> INSERT INTO data (position, username, password)
  -> VALUES
  -> ('Manager', 'manager1', 'password1'),
  -> ('Supervisor', 'supervisor1', 'password2'),
  -> ('Engineer', 'engineer1', 'password3'),
  -> ('Salesperson', 'salesperson1', 'password4'),
  -> ('Technician', 'technician1', 'password5');
Query OK, 5 rows affected (0.01 sec)
Records: 5 Duplicates: 0 Warnings: 0

mysql> USE inteli;
Database changed
mysql>
mysql> SELECT * FROM data;
+-----+-----+-----+-----+
| employee_id | position | username | password |
+-----+-----+-----+-----+
| 1 | Manager | manager1 | password1 |
| 2 | Supervisor | supervisor1 | password2 |
| 3 | Engineer | engineer1 | password3 |
| 4 | Salesperson | salesperson1 | password4 |
| 5 | Technician | technician1 | password5 |
+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> []
```

i-0ac6283877cd812f (Project_1)

PublicIPs: 50.18.19.227 PrivateIPs: 172.31.26.249

CloudShell Feedback

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Security groups | EC2 | us-west-1 | RDS | us-west-1 | EC2 Instance Connect | us-west-1 | Welcome Page

Not secure | 50.18.19.227/index.html

Welcome to Our Website

Explore our awesome content by logging in below.

Login

Security groups | EC2 | us-west-1 | RDS | us-west-1 | EC2 Instance Connect | us-west-1 | Login

Not secure | 50.18.19.227/page/login.php

Login

Username |manager1

Password |

Login

