

Project 1

Deploying a Multi-Tier Website Using AWS EC2

Problem Statement

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.

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
 - Database name: intel
 - Table name: data
 - Database password: intel123
 5. Change hostname in website
 6. Allow traffic from EC2 to RDS Instance
 7. Allow all-traffic to EC2 instance
-

Created a VPC.

The screenshot displays the AWS Management Console interface for a VPC. The left sidebar shows the navigation menu with categories like Virtual private cloud, Security, and Networking. The main content area is titled 'Details' and shows the VPC ID 'vpc-055ed102b806f49e7' in a state of 'Available'. It lists various configuration details such as Tenancy (Default), DHCP option set (dopt-0dd008e8c034ab951), IPv4 CIDR (10.20.0.0/16), and DNS settings. Below the details, there is a 'Resource map' section that provides a visual overview of the VPC's components, including subnets (us-east-1b, project-1-2, project-1-3, project-1), route tables (rtb-01af77689f624ba49, project-1-rt), and network connections (project-1-igw). A 'Snipping Tool' window is visible over the resource map.

Details

VPC ID: vpc-055ed102b806f49e7

State: Available

DNS hostnames: Disabled

DNS resolution: Enabled

Tenancy: Default

DHCP option set: dopt-0dd008e8c034ab951

Main route table: rtb-01af77689f624ba49

Main network ACL: acl-07a36e8035158bc81

Default VPC: No

IPv4 CIDR: 10.20.0.0/16

IPv6 pool: -

IPv6 CIDR (Network border group): -

Network Address Usage metrics: Disabled

Route 53 Resolver DNS Firewall rule groups: -

Owner ID: 786189244130

Resource map

VPC: project-1-vpc

Subnets (3): us-east-1b, project-1-2, project-1-3, project-1

Route tables (2): rtb-01af77689f624ba49, project-1-rt

Network connections (1): project-1-igw

Created three subnets namely project-1,project1-2,project1-3.

The screenshot shows the 'Subnets (13)' page in the AWS Management Console. It features a table listing various subnets, including system subnets and user-defined ones. The user-defined subnets are project-1, project-1-2, and project-1-3, all in an 'Available' state. The table columns include checkboxes, subnet IDs, VPC IDs, and CIDR blocks. At the bottom, there is a 'Select a subnet' section.

Subnets (13)

	Subnet ID	State	VPC ID	CIDR Block	Default for VPC
<input type="checkbox"/>	subnet-0bcdd318487f8a44e	Available	vpc-043bf7fc3a68354e3	172.31.64.0/20	-
<input type="checkbox"/>	subnet-0d7a79dd688fc57c1	Available	vpc-043bf7fc3a68354e3	172.31.0.0/20	-
<input type="checkbox"/>	subnet-0710632aac309e2c4	Available	vpc-043bf7fc3a68354e3	172.31.48.0/20	-
<input type="checkbox"/>	subnet-039de64dac30b339c	Available	vpc-043bf7fc3a68354e3	172.31.32.0/20	-
<input type="checkbox"/>	project-1	Available	vpc-055ed102b806f49e7 pro...	10.20.1.0/24	-
<input type="checkbox"/>	project-1-2	Available	vpc-055ed102b806f49e7 pro...	10.20.2.0/24	-
<input type="checkbox"/>	project-1-3	Available	vpc-055ed102b806f49e7 pro...	10.20.3.0/24	-

Select a subnet

Created an internet gateway and attached to the VPC.

The screenshot shows the AWS Management Console interface for the 'Internet gateways' section. The left sidebar contains navigation links for VPC dashboard, EC2 Global View, and various VPC resources. The main content area displays a table of internet gateways. The 'project-1-igw' gateway is selected, and its details are shown below the table. The gateway is attached to the 'project-1-vpc' VPC.

Name	Internet gateway ID	State	VPC ID	Owner
project-1-igw	igw-047614281753a7132	Attached	vpc-055ed102b806f49e7 project-1-vpc	786189244130

igw-047614281753a7132 / project-1-igw

Details

Internet gateway ID	State	VPC ID	Owner
igw-047614281753a7132	Attached	vpc-055ed102b806f49e7 project-1-vpc	786189244130

Created a route table and added internet gateway route

The screenshot shows the AWS Management Console interface for the 'Route tables' section. The left sidebar contains navigation links for VPC dashboard, EC2 Global View, and various VPC resources. The main content area displays a table of route tables. The 'project-1-rt' route table is selected, and its details are shown below the table. The route table is associated with the 'project-1-vpc' VPC and contains two routes: one for 0.0.0.0/0 pointing to the internet gateway and one for 10.20.0.0/16 pointing to the local network.

Name	Route table ID	Explicit subnet associat...	Edge associations	Main	VPC
-	rtb-01af77689f624ba49	-	-	Yes	vpc-055ed102b806f49e7 pro...
project-1-rt	rtb-0d90efa0affd55a4b	3 subnets	-	No	vpc-055ed102b806f49e7 pro...

rtb-0d90efa0affd55a4b / project-1-rt

Routes (2)

Destination	Target	Status	Propagated
0.0.0.0/0	igw-047614281753a7132	Active	No
10.20.0.0/16	local	Active	No

All the three subnets are made into public subnets by associating them with the public route table.

The screenshot shows the AWS Management Console interface for the 'Route tables (1/6)' page. The left sidebar contains navigation links for VPC dashboard, EC2 Global View, and various VPC services. The main content area displays a table of route tables. The 'project-1-rt' route table is selected, and its 'Subnet associations' tab is active. The table shows three explicit subnet associations: 'project-1' (subnet-0d36347af346e2f31), 'project-1-3' (subnet-0f55c2134a89f2193), and 'project-1-2' (subnet-069bf970f608bfea5). All three subnets are associated with the public VPC 'vpc-055ed102b806f49e7'.

Name	Route table ID	Explicit subnet associat...	Edge associations	Main	VPC
-	rtb-01af77689f624ba49	-	-	Yes	vpc-055ed102b806f49e7 pro...
project-1-rt	rtb-0d90efa0affd55a4b	3 subnets	-	No	vpc-055ed102b806f49e7 pro...

Name	Subnet ID	IPv4 CIDR	IPv6 CIDR
project-1	subnet-0d36347af346e2f31	10.20.1.0/24	-
project-1-3	subnet-0f55c2134a89f2193	10.20.3.0/24	-
project-1-2	subnet-069bf970f608bfea5	10.20.2.0/24	-

Launched an EC2 instance in one of the subnets.

The screenshot shows the AWS Management Console interface for the 'Instances (1/7)' page. The left sidebar contains navigation links for EC2 Dashboard, EC2 Global View, and various EC2 services. The main content area displays a table of instances. The 'project-1' instance is selected, and its details are displayed. The instance is running on a t2.micro instance type, associated with the public VPC 'vpc-055ed102b806f49e7' and the public subnet 'subnet-0d36347af346e2f31'.

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IP
php-test	i-02b54964f1f99da56	Running	t3.micro	2/2 checks passed	No alarms	us-east-1b	ec2-44-
RDS-instance	i-0631b5aee3452081	Stopped	t2.micro	-	No alarms	us-east-1e	-
amazon linux-task	i-0051ff76675337097	Stopped	t2.micro	-	No alarms	us-east-1c	-
Ubuntu-task	i-0c8080487bf92c604	Stopped	t2.micro	-	No alarms	us-east-1b	-
project-1	i-09a9ccf5c63c6a1e4	Running	t2.micro	2/2 checks passed	No alarms	us-east-1b	-

Instance: i-09a9ccf5c63c6a1e4 (project-1)

Attribute	Value
Hostname type	ip-10-20-1-82.ec2.internal
Private IP DNS name (IPv4 only)	ip-10-20-1-82.ec2.internal
Instance type	t2.micro
VPC ID	vpc-055ed102b806f49e7 (project-1-vpc)
Subnet ID	subnet-0d36347af346e2f31 (project-1)
Auto-assigned IP address	44.193.8.119 [Public IP]
Elastic IP addresses	-
AWS Compute Optimizer finding	Opt-in to AWS Compute Optimizer for recommendations. Learn more
Auto Scaling Group name	-

Installed Apache2 in the EC2 instance to host the web server.

```
aws
Services
Search
[Alt+S]
N. Virginia
sugunamma narri

ubuntu@ip-10-20-1-82:~$ sudo apt install apache2 -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils bzip2 libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.3-0 mailcap mime-support ssl-cert
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser bzip2-doc
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils bzip2 libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.3-0 mailcap mime-support ssl-cert
0 upgraded, 13 newly installed, 0 to remove and 6 not upgraded.
Need to get 2138 kB of archives.
After this operation, 8505 kB of additional disk space will be used.
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libapr1 amd64 1.7.0-8ubuntu0.22.04.1 [108 kB]
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libaprutil1 amd64 1.6.1-5ubuntu4.22.04.1 [92.6 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libaprutil1-dbd-sqlite3 amd64 1.6.1-5ubuntu4.22.04.1 [11.3 kB]
Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libaprutil1-ldap amd64 1.6.1-5ubuntu4.22.04.1 [9168 B]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 liblua5.3-0 amd64 5.3.6-1build1 [140 kB]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 apache2-bin amd64 2.4.52-1ubuntu4.4 [1345 kB]
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 apache2-data all 2.4.52-1ubuntu4.4 [165 kB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 apache2-utils amd64 2.4.52-1ubuntu4.4 [89.5 kB]
Get:9 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 mailcap all 3.70+mmulubuntu [23.8 kB]
Get:10 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 mime-support all 3.66 [3696 B]
Get:11 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 apache2 amd64 2.4.52-1ubuntu4.4 [97.8 kB]
Get:12 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 bzip2 amd64 1.0.8-5build1 [34.8 kB]

i-09a9ccf5c63c6a1e4 (project-1)
PublicIPs: 44.193.8.119 PrivateIPs: 10.20.1.82
```

Default web page



Copied the downloaded php code to the EC2 instance by using scp command.

```
rames@Ramesh-MINGW64 ~/Downloads
$ scp -i "assignmentkeypair.pem" code.zip ubuntu@44.193.8.119:/home/ubuntu
code.zip
100% 769KB 367.1KB/s 00:02

rames@Ramesh-MINGW64 ~/Downloads
$ scp -i "assignmentkeypair.pem" "code" ubuntu@44.193.8.119:/home/ubuntu
scp: local "code" is not a regular file
scp: failed to upload file code to /home/ubuntu

rames@Ramesh-MINGW64 ~/Downloads
$ scp -r -i "assignmentkeypair.pem" "code" ubuntu@44.193.8.119:/home/ubuntu
1.png 100% 190KB 129.3KB/s 00:01
2.png 100% 622KB 660.0KB/s 00:00
index.php 100% 2135 7.2KB/s 00:00

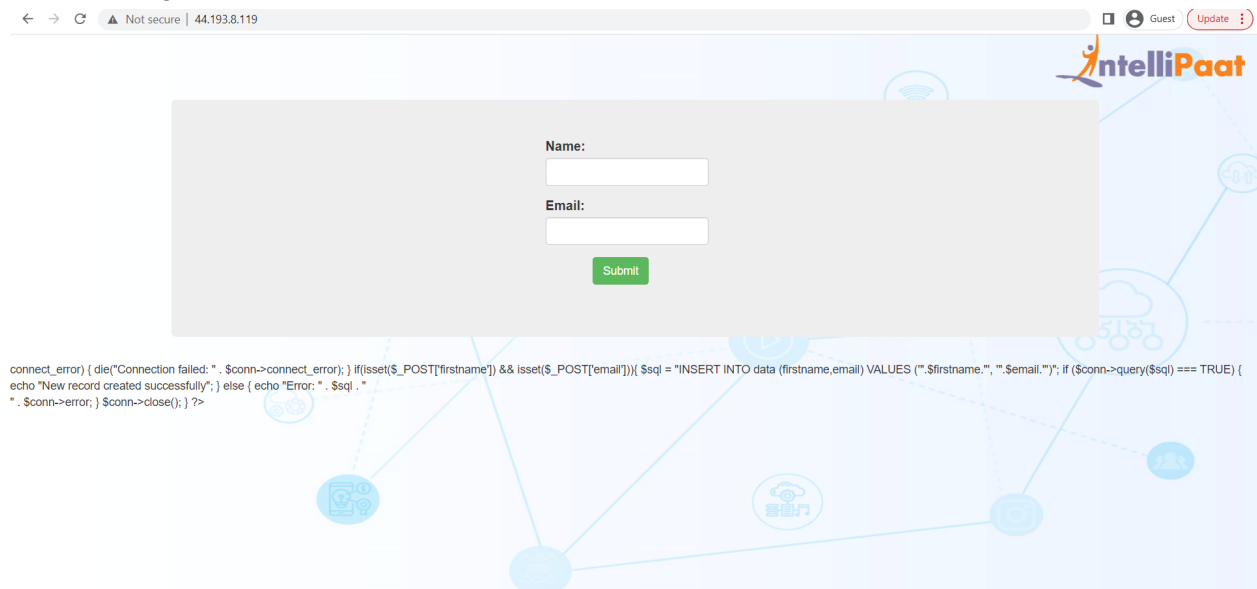
rames@Ramesh-MINGW64 ~/Downloads
$
```

Remove the default index.html file in the apache2 home directory (/var/www/html) and move the php code to this directory i.e., index.php and images dir.

```
aws
Services
Search
[Alt+S]
N. Virginia
sugunamma narri
ubuntu@ip-10-20-1-82:~$ pwd
/home/ubuntu
ubuntu@ip-10-20-1-82:~$ ls
code
ubuntu@ip-10-20-1-82:~$ cd code/
ubuntu@ip-10-20-1-82:~/code$ ls
1243
ubuntu@ip-10-20-1-82:~/code$ cd 1243
ubuntu@ip-10-20-1-82:~/code/1243$ ls
images index.php
ubuntu@ip-10-20-1-82:~/code/1243$ sudo mv index.php images /var/www/html
ubuntu@ip-10-20-1-82:~/code/1243$ cd
ubuntu@ip-10-20-1-82:~$ cd /var/www/html
ubuntu@ip-10-20-1-82:~/code$ ls
images index.html index.php
ubuntu@ip-10-20-1-82:~/code$ sudo rm index.html
ubuntu@ip-10-20-1-82:~/code$
```

i-09a9ccf5c63c6a1e4 (project-1)
PublicIPs: 44.193.8.119 PrivateIPs: 10.20.1.82

Now, browse to the public IP address and see the php app is running. However, we further notice that database connection is error-ed out since the proper details are not put in the php code running.



Create Database & Table in RDS Instance

- Database name: intel
- Table name: data
- Database password: intel123.

The screenshot shows the Amazon RDS console interface. On the left is a navigation menu with options like Dashboard, Databases, Query Editor, Performance Insights, Snapshots, Exports in Amazon S3, Automated backups, Reserved instances, Proxies, Subnet groups, Parameter groups, Option groups, Custom engine versions, Events, Event subscriptions, Recommendations, and Certificate update. The main panel displays the details for an RDS instance named 'database-1'. At the top, there's a green banner asking for feedback. Below it, the instance summary is shown with a table:

Summary			
DB identifier database-1	CPU 2.48%	Status Available	Class db.t3.micro
Role Instance	Current activity 0 Connections	Engine MySQL Community	Region & AZ us-east-1b

Below the summary, there are tabs for Connectivity & security, Monitoring, Logs & events, Configuration, Maintenance & backups, and Tags. The 'Connectivity & security' tab is active, showing details for Endpoint and port, Networking, and Security.

Connectivity & security		
Endpoint and port Endpoint database-1.c2cnudkrgq0.us-east-1.rds.amazonaws.com Port 3306	Networking Availability Zone us-east-1b VPC project-1-vpc (vpc-055ed102b806f49e7) Subnet group rds-ec2-subnet-group-1	Security VPC security groups rds-ec2-1 (sg-03c3d1d70a431ff25) Active project-1-sg (sg-0ee28717750e96b69) Active Publicly accessible No

Connected to the EC2 instance and installed a mysql client in it.

```
ubuntu@ip-10-20-1-82:~$ sudo add-apt-repository -y ppa:ondrej/php
PPA publisher dpggym, you may need to include "main/debian" component
Repository: 'deb https://ppa.launchpadcontent.net/ondrej/php/ubuntu/ jammy main'
Description:
Co-installable PHP versions: PHP 5.6, PHP 7.x, PHP 8.x and most requested extensions are included. Only Supported Versions of PHP (http://php.net/supported-versions.php) for Supported Ubuntu Releases (https://wiki.ubuntu.com/Releases) are provided. Don't ask for end-of-life PHP versions or Ubuntu release, they won't be provided.
Debian oldstable and stable packages are provided as well: https://deb.sury.org/#debian-dpa
You can get more information about the packages at https://deb.sury.org
IMPORTANT: The <foo>-backports is now required on older Ubuntu releases.
BUGS&FEATURES: This PPA now has a Issue tracker:
https://deb.sury.org/#bug-reporting
CAVEATS:
1. If you are using php-gearman, you need to add ppa:ondrej/pkg-gearman
2. If you are using apache2, you are advised to add ppa:ondrej/apache2
3. If you are using nginx, you are advised to add ppa:ondrej/nginx-mainline
   or ppa:ondrej/nginx
PLEASE READ: If you like my work and want to give me a little motivation, please consider donating regularly: https://donate.sury.org/
WARNING: add-apt-repository is broken with non-UTF-8 locales, see
https://github.com/oerdnj/deb.sury.org/issues/56 for workaround:
```

```
ubuntu@ip-10-20-1-82:~$ sudo apt install php5.6 mysql-client php5.6-mysqli
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Note, selecting 'php5.6-mysqli' instead of 'php5.6-mysqli'
The following additional packages will be installed:
  libapache2-mod-php5.6 mysql-client-8.0 mysql-client-core-8.0 mysql-common php-common php5.6-cli php5.6-common php5.6-json php5.6-opcache php5.6-readline
Suggested packages:
  php-pear
The following NEW packages will be installed:
  libapache2-mod-php5.6 mysql-client mysql-client-core-8.0 mysql-client-core-8.0 mysql-common php-common php5.6 php5.6-cli php5.6-common php5.6-json php5.6-mysqli
  php5.6-opcache php5.6-readline
0 upgraded, 13 newly installed, 0 to remove and 8 not upgraded.
Need to get 6799 kB of archives.
After this operation, 76.8 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://us-east-1-ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 mysql-client-core-8.0 amd64 8.0.32-0ubuntu0.22.04.2 [2677 kB]
Get:2 http://us-east-1-ec2.archive.ubuntu.com/ubuntu jammy/main amd64 mysql-common all 5.8+1.0.8 [7212 B]
Get:3 http://us-east-1-ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 mysql-client-8.0 amd64 8.0.32-0ubuntu0.22.04.2 [22.7 kB]
Get:4 http://us-east-1-ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 mysql-client all 8.0.32-0ubuntu0.22.04.2 [9350 B]
Get:5 https://ppa.launchpadcontent.net/ondrej/php/ubuntu jammy/main amd64 php-common all 2:93+ubuntu22.04.1+deb.sury.org+2 [16.6 kB]
Get:6 https://ppa.launchpadcontent.net/ondrej/php/ubuntu jammy/main amd64 php5.6-common amd64 5.6.40-65+ubuntu22.04.1+deb.sury.org+1 [767 kB]
Get:7 https://ppa.launchpadcontent.net/ondrej/php/ubuntu jammy/main amd64 php5.6-json amd64 5.6.40-65+ubuntu22.04.1+deb.sury.org+1 [18.8 kB]
Get:8 https://ppa.launchpadcontent.net/ondrej/php/ubuntu jammy/main amd64 php5.6-opcache amd64 5.6.40-65+ubuntu22.04.1+deb.sury.org+1 [67.7 kB]
Get:9 https://ppa.launchpadcontent.net/ondrej/php/ubuntu jammy/main amd64 php5.6-readline amd64 5.6.40-65+ubuntu22.04.1+deb.sury.org+1 [14.0 kB]
Get:10 https://ppa.launchpadcontent.net/ondrej/php/ubuntu jammy/main amd64 php5.6-cli amd64 5.6.40-65+ubuntu22.04.1+deb.sury.org+1 [1412 kB]
```

Connected to the created database by giving endpoint, data name and password in mysql command.

```
ubuntu@ip-10-20-1-82:~$ mysql -h database-1.c2cnudksrgq0.us-east-1.rds.amazonaws.com -u admin -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 18
Server version: 8.0.28 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 |
| intel      |
| mysql      |
| performance_schema |
| sys        |
+-----+
5 rows in set (0.00 sec)

mysql> use intel;
Database changed
mysql> create table data(firstname varchar(20), email varchar(20));
Query OK, 0 rows affected (0.03 sec)
```

```
mysql> show tables;
+-----+
| Tables_in_intel |
+-----+
| data             |
+-----+
1 row in set (0.00 sec)

mysql> exit
Bye
ubuntu@ip-10-20-1-82:~$ cd -
/var/www/html
ubuntu@ip-10-20-1-82:/var/www/html$ ls
images  index.php
ubuntu@ip-10-20-1-82:/var/www/html$ vi index.php
ubuntu@ip-10-20-1-82:/var/www/html$ mysql -h database-1.c2cnudksrgq0.us-east-1.rds.amazonaws.com -u admin -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 23
Server version: 8.0.28 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> use intel;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> select * from data;
Empty set (0.00 sec)
```


Enter the data in the application running on the web server.

← → ↻ Not secure | 44.193.8.119

Guest Update

IntelliPaat

Name:

Email:

The data entered is stored in the RDS database and which can be shown in the tables of the database created.

```
Database changed
mysql> select * from data;
Empty set (0.00 sec)

mysql> select * from data;
+-----+-----+
| firstname | email |
+-----+-----+
| teju      | teju123@gmail.com |
+-----+-----+
1 row in set (0.00 sec)

mysql> 
```

i-09a9ccf5c63c6a1e4 (project-1)

PublicIPs: 44.193.8.119 PrivateIPs: 10.20.1.82

Created an AMI image of the instance.

Amazon Machine Images (AMIs) (1/1) Info

Owned by me | Find AMI by attribute or tag

Name	AMI ID	AMI name	Source	Owner	Visibility
-	ami-Ofec21f4c11fcf4e7	project-1-AMI	786189244130/project-1-AMI	786189244130	Private

AMI ID: ami-Ofec21f4c11fcf4e7

Details | Permissions | Storage | Tags

Property	Value
AMI ID	ami-Ofec21f4c11fcf4e7
Image type	machine
Platform details	Linux/UNIX
Root device type	EBS
AMI name	project-1-AMI
Owner account ID	786189244130
Architecture	x86_64
Usage operation	RunInstances
Root device name	/dev/sda1
Status	Available
Source	786189244130/project-1-AMI
Virtualization type	hvm
Boot mode	-
State reason	-
Creation date	Thu Mar 30 2023 23:19:53 GMT+0530 (India Standard Time)
Kernel ID	-

Created a launch configuration with the AMI created above.

Launch configuration name: project-LC

Recommendation to not use launch configurations
Amazon EC2 Auto Scaling no longer adds support for new EC2 features to launch configurations and will stop supporting new EC2 instances types after December 31, 2022. We recommend that customers using launch configurations migrate to launch templates. For more information, see the documentation.

Launch configurations (1/2) Info

Search launch configurations

Name	AMI ID	Instance type	Spot price	Creation time
project-LC	ami-Ofec21f4c11fcf4e7	t2.micro	-	Thu Mar 30 2023 23:37:03 GMT+0530 (India S...)
task-LC	ami-0e9505e2eaf...	t2.micro	-	Fri Mar 24 2023 22:23:36 GMT+0530 (India St...)

Launch configuration: project-LC

By using the above Launch Configuration, Created an Auto Scaling group with 2 minimum and 3 maximum instances.

The screenshot shows the AWS Management Console interface for an Auto Scaling group named 'project-1-ASG'. The left sidebar contains navigation links for various AWS services. The main content area displays the 'project-1-ASG' details under the 'Automatic scaling' tab. The 'Group details' section shows the Auto Scaling group name, desired capacity (2), minimum capacity (2), maximum capacity (3), date created, and the Amazon Resource Name (ARN). The 'Launch configuration' section shows the launch configuration name (project-LC), AMI ID, instance type (t2.micro), storage (volumes), security groups, key pair name, and create time.

Group details			
Auto Scaling group name	Desired capacity	Status	Amazon Resource Name (ARN)
project-1-ASG	2	-	arn:aws:autoscaling:us-east-1:786189244130:autoScalingGroup:26e6ddb1-19b3-47ca-813a-6c1f33778a60:autoScalingGroupName/project-1-ASG
Date created	Minimum capacity		
Thu Mar 30 2023 23:39:14 GMT+0530 (India Standard Time)	2		
	Maximum capacity		
	3		

Launch configuration			
Launch configuration	AMI ID	Instance type	Create time
project-LC	ami-0fec21f4c11fc4e7	t2.micro	Thu Mar 30 2023 23:37:03 GMT+0530 (India Standard Time)
Storage (volumes)	Security groups	Key pair name	
/dev/sda1	sg-0eee28717750e96b9	assignmentkeypair	

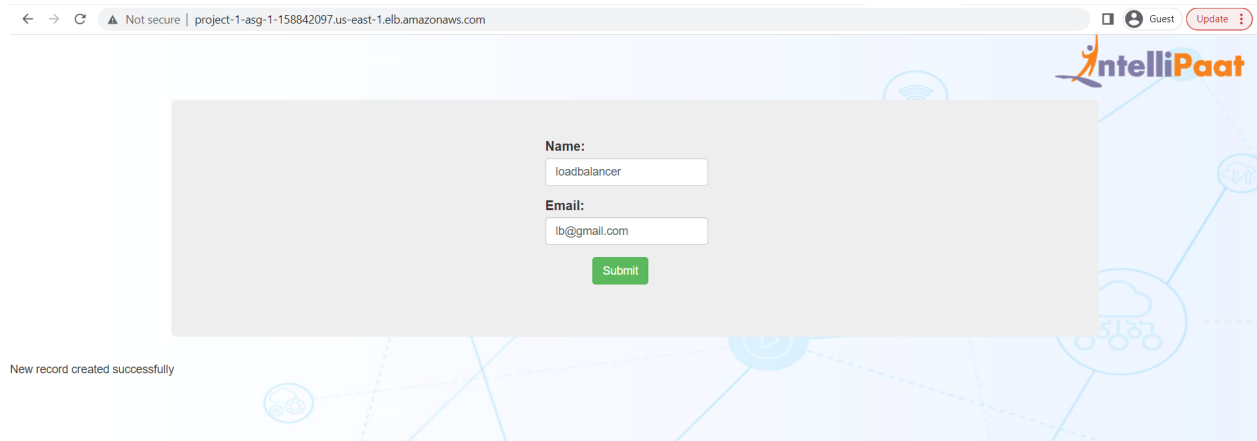
Create an application load balancer.

The screenshot shows the AWS Management Console interface for an application load balancer named 'project-1-ASG-1'. The left sidebar contains navigation links for various AWS services. The main content area displays the 'Load balancers' section with a table listing the load balancers. The 'project-1-ASG-1' load balancer is selected, and its details are shown in the 'Load balancer: project-1-ASG-1' section. The details include the load balancer type (Application), DNS name, status (Active), VPC, IP address type (IPv4), scheme (Internet-facing), availability zones, and hosted zone.

Name	DNS name	State	VPC ID	Availability Zones	Type	Date created
project-1-ASG-1	project-1-ASG-1-1588420...	Active	vpc-055ed102b806f49e7	5 Availability Zones	application	March 30, 2023, 23:39 (UTC+05:30)

Load balancer: project-1-ASG-1			
Details			
Load balancer type	DNS name	Status	VPC
Application	project-1-ASG-1-158842097.us-east-1.elb.amazonaws.com (A Record)	Active	vpc-055ed102b806f49e7
IP address type	Scheme	Availability Zones	Hosted zone
IPv4	Internet-facing	subnet-0d56347af346e2f31 us-east-1b (use1-az1)	Z355XDOTRQ7X7K

Browse with the loadbalancer DNS endpoint to verify that app is accessible. To further verify that data is stored in the RDS, we have given the username and email with respect to loadbalancer things.



IntelliPaat

Name:

Email:

Submit

New record created successfully

Now, switch to ec2 and login to rds database/table to confirm.

```
mysql> select * from data;
+-----+-----+
| firstname | email |
+-----+-----+
| teju      | teju123@gmail.com |
| loadbalancer | lb@gmail.com |
+-----+-----+
2 rows in set (0.00 sec)

mysql>
```

i-09a9ccf5c63c6a1e4 (project-1)

PublicIPs: 44.193.8.119 PrivateIPs: 10.20.1.82