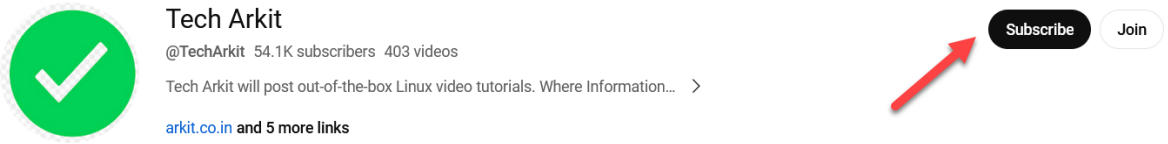

Deploying a Multi-Tier Website Using AWS EC2

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 upfront 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 its product to AWS. They have the following things set up right now:

1. MySQL DB

2. Website (PHP)

The company wants high availability of this product, therefore, it 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 the hostname on the website

6. Allow traffic from EC2 to the RDS instance

7. Allow all traffic to the EC2 instance

Answer

Login to the AWS Web Console and go to EC2 Service

https://www.youtube.com/techarkit and https://arkit.co.in

Tech Arkit

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Tech Arkit will post out-of-the-box Linux video tutorials. Where Information... >

arkit.co.in and 5 more links

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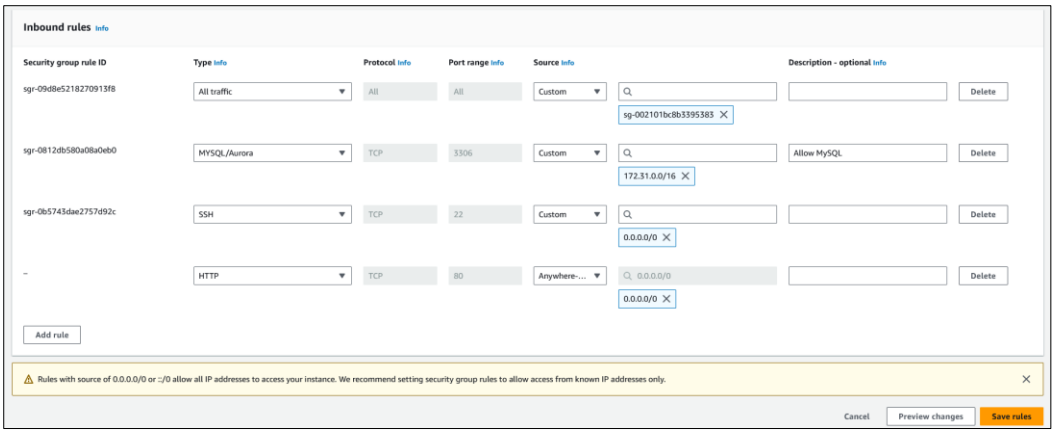
Create a Security Group or use an existing subnet with the below services/ports allowed.

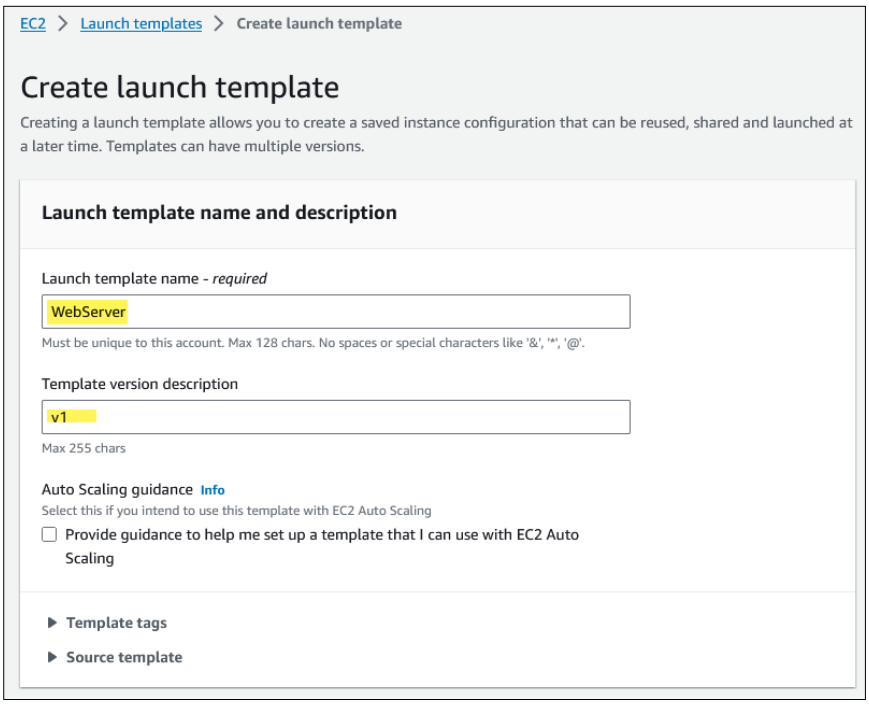
- HTTP – 80
- MySQL – 3306
- SSH – 22



172.31.0.0/16 is my VPC CIDR value.

Save Rules

Create **Launch Templates**



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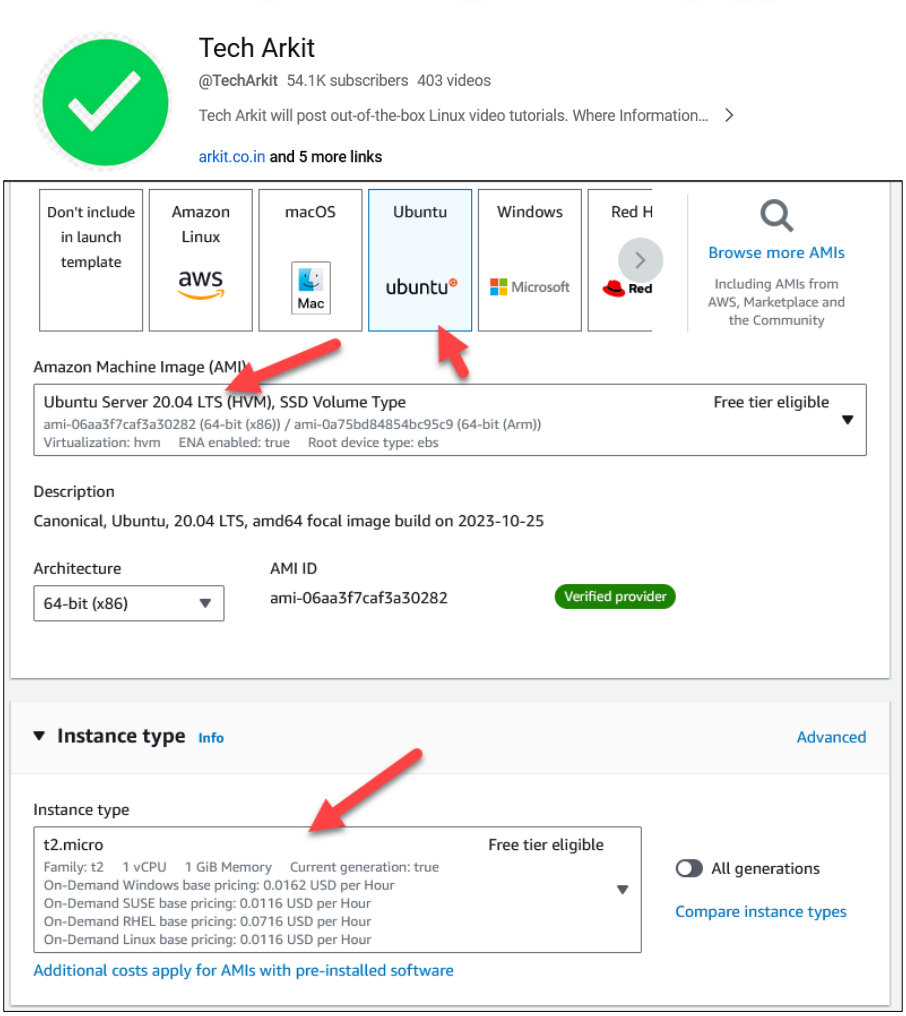

Select Ubuntu, 20.04 LTS, and instance type t2.micro.

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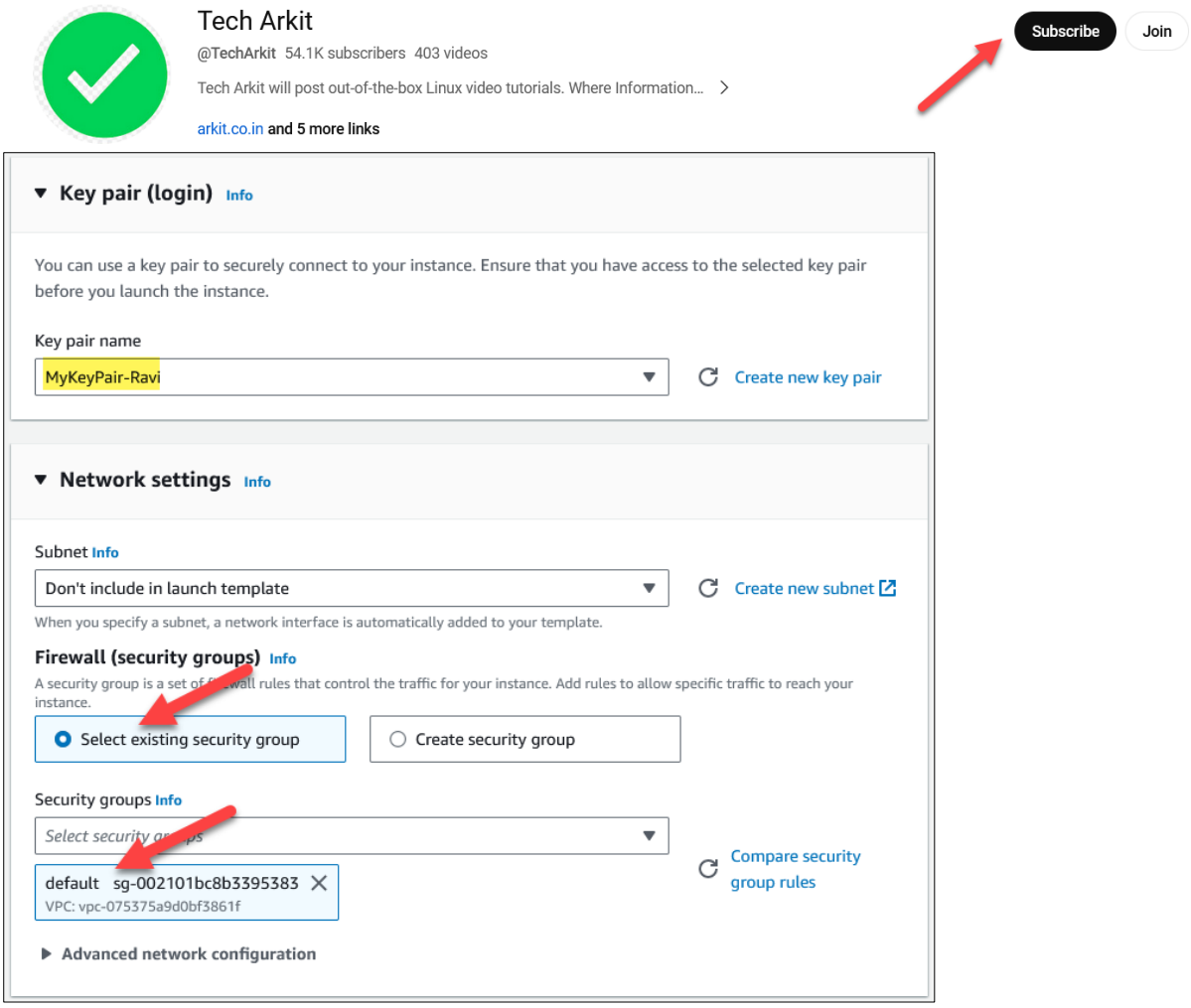
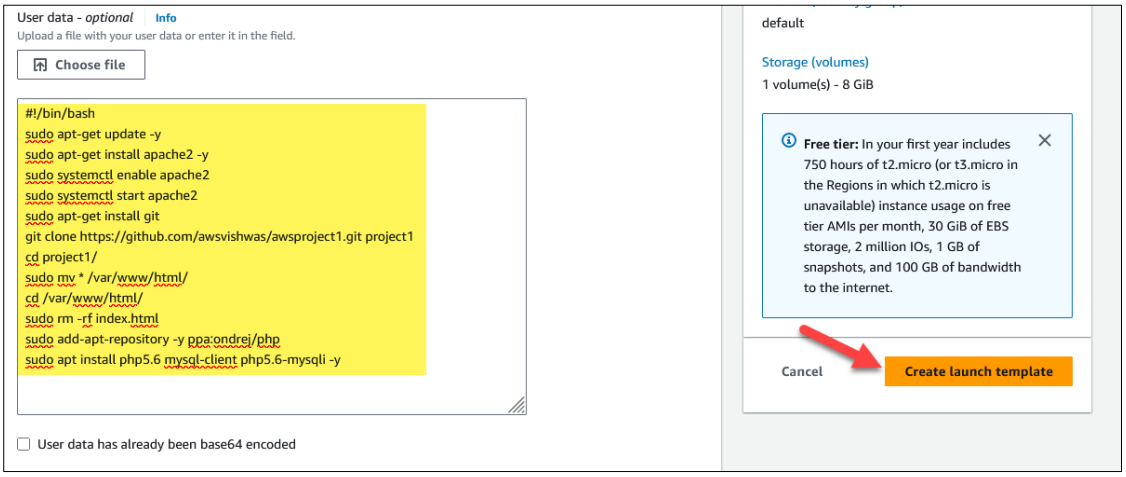
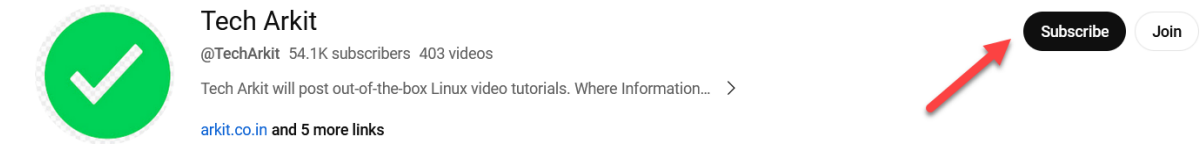


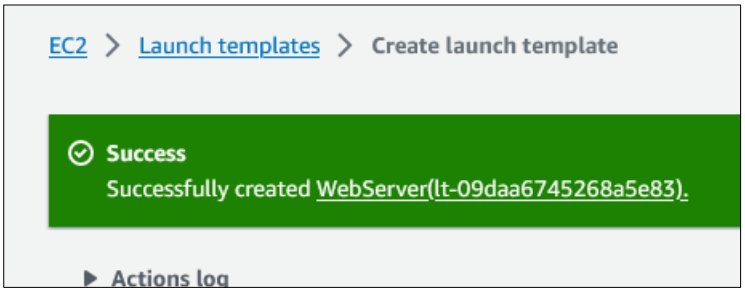



```
#!/bin/bash
sudo apt-get update -y
sudo apt-get install apache2 -y
sudo systemctl enable apache2
sudo systemctl start apache2
sudo apt-get install git
git clone https://github.com/awsvishwas/awsproject1.git project1
```

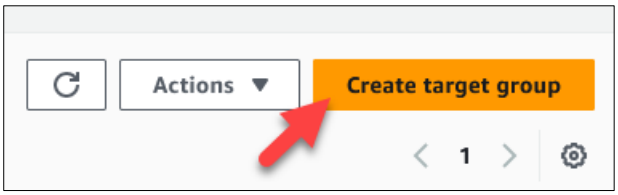
https://www.youtube.com/techarkit and https://arkit.co.in

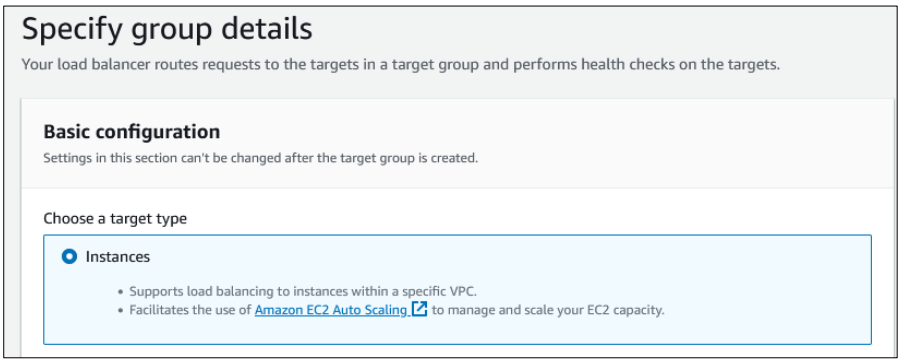


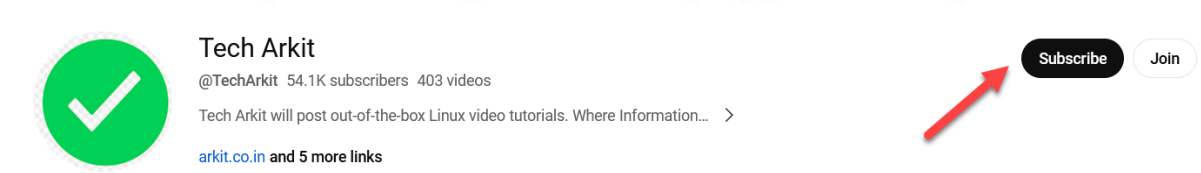

```
cd project1/

sudo mv * /var/www/html/

cd /var/www/html/

sudo rm -rf index.html

sudo add-apt-repository -y ppa:ondrej/php

sudo apt install php5.6 mysql-client php5.6-mysqli -y
```



Create Target Groups



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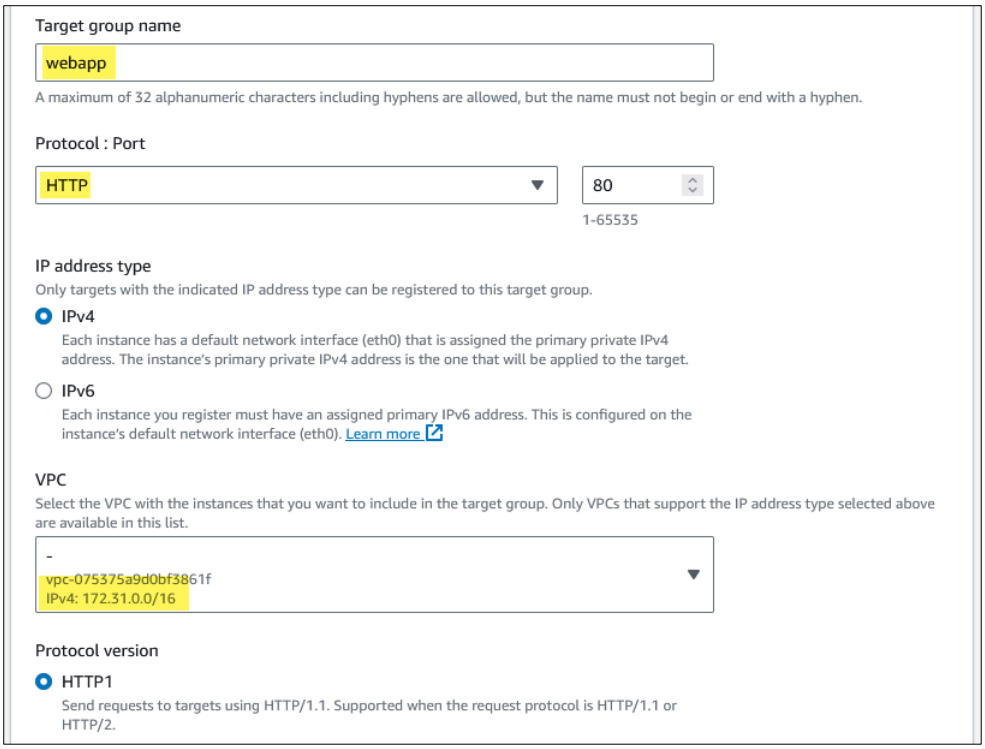
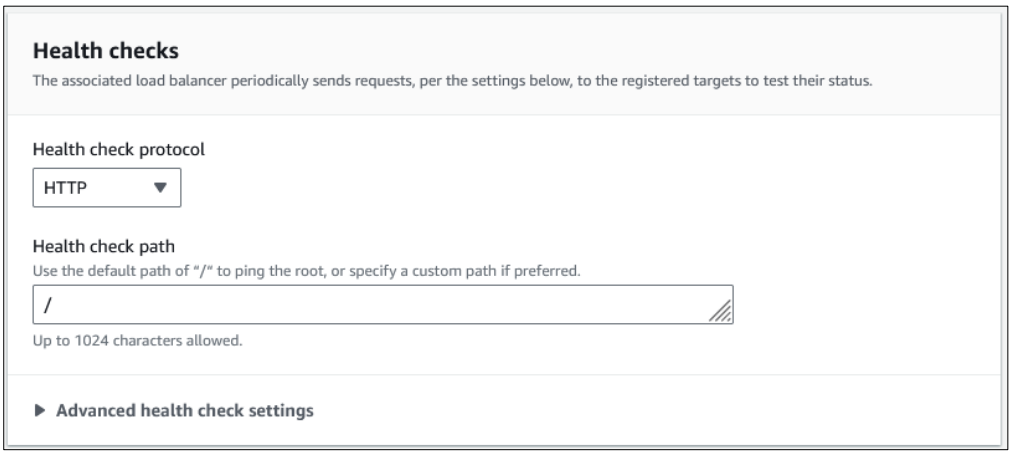
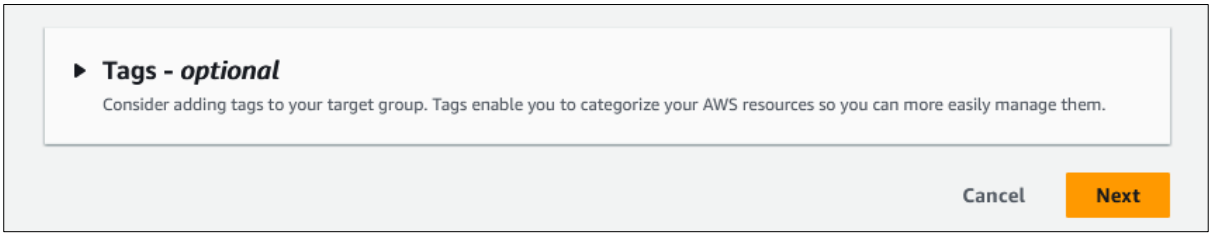
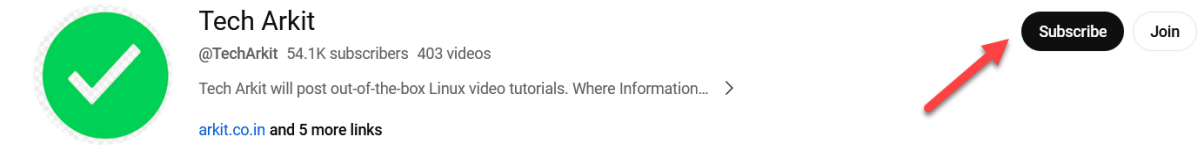
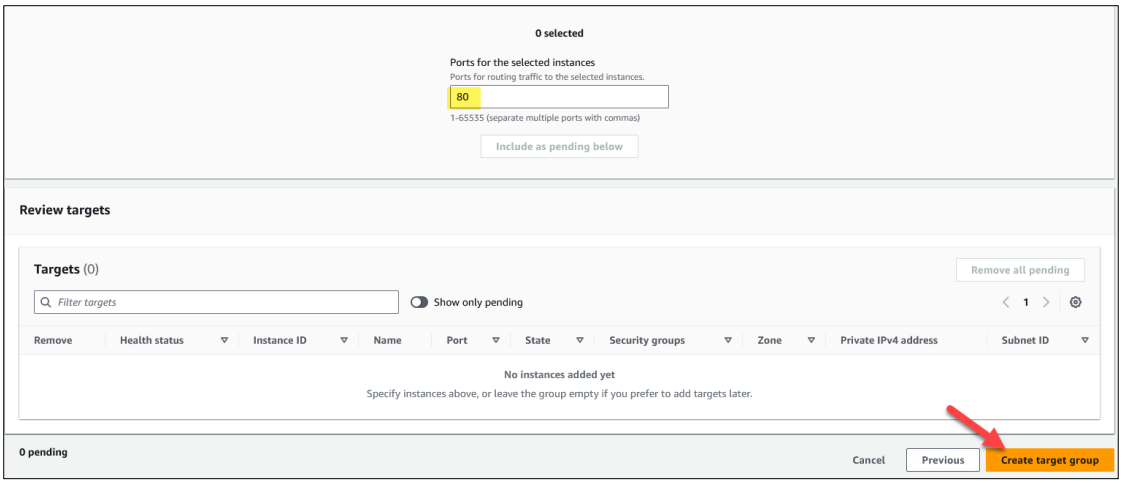

Target group name
webapp
A maximum of 32 alphanumeric characters including hyphens are allowed, but the name must not begin or end with a hyphen.
Protocol : Port
HTTP
80
1-65535
IP address type
Only targets with the indicated IP address type can be registered to this target group.
IPv4
Each instance has a default network interface (eth0) that is assigned the primary private IPv4 address. The instance's primary private IPv4 address is the one that will be applied to the target.
IPv6
Each instance you register must have an assigned primary IPv6 address. This is configured on the instance's default network interface (eth0). Learn more
VPC
Select the VPC with the instances that you want to include in the target group. Only VPCs that support the IP address type selected above are available in this list.
-
vpc-075375a9d0bf3861f
IPv4: 172.31.0.0/16
Protocol version
HTTP1
Send requests to targets using HTTP/1.1. Supported when the request protocol is HTTP/1.1 or HTTP/2.


Health checks
The associated load balancer periodically sends requests, per the settings below, to the registered targets to test their status.
Health check protocol
HTTP
Health check path
Use the default path of "/" to ping the root, or specify a custom path if preferred.
/
Up to 1024 characters allowed.
Advanced health check settings


Tags - optional
Consider adding tags to your target group. Tags enable you to categorize your AWS resources so you can more easily manage them.
Cancel
Next

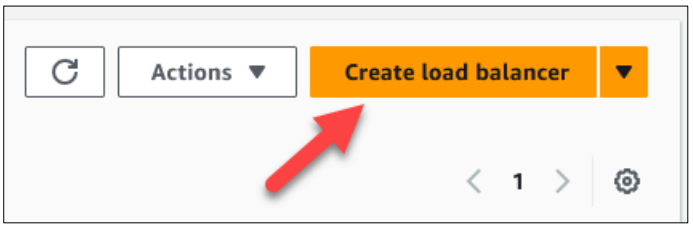
Click **Next**

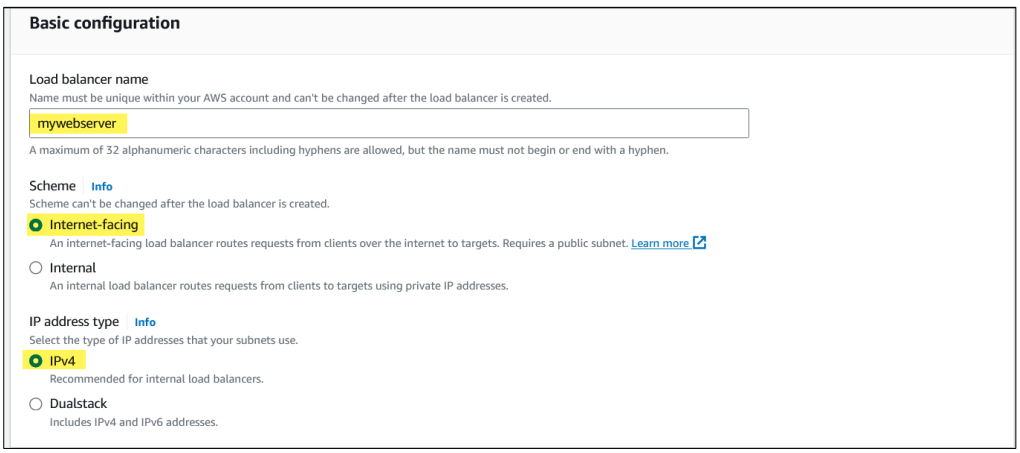




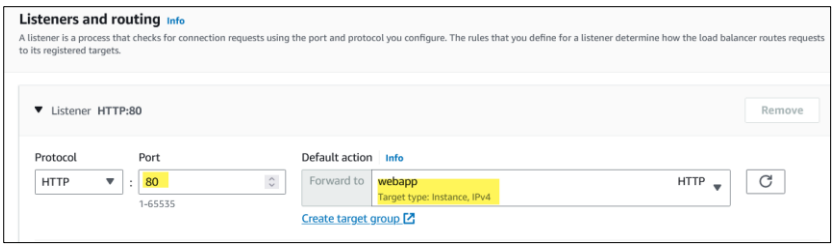
Click on **Create Target Group**

Now let's go ahead and create a Load Balancer for High availability and required for Auto Scaling

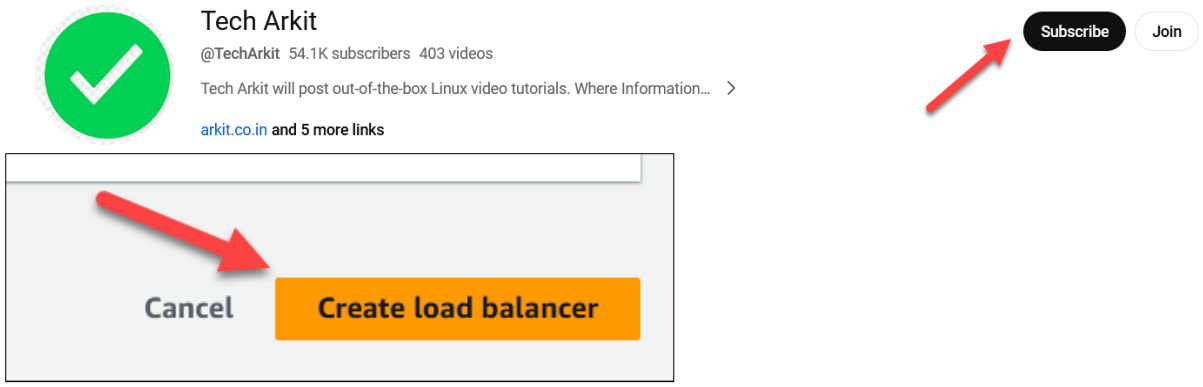




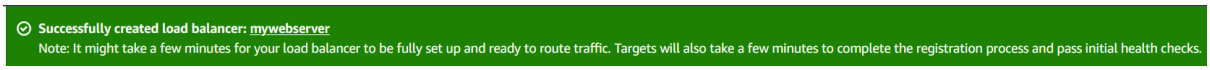
Select the VPC, Subnets and Security Groups



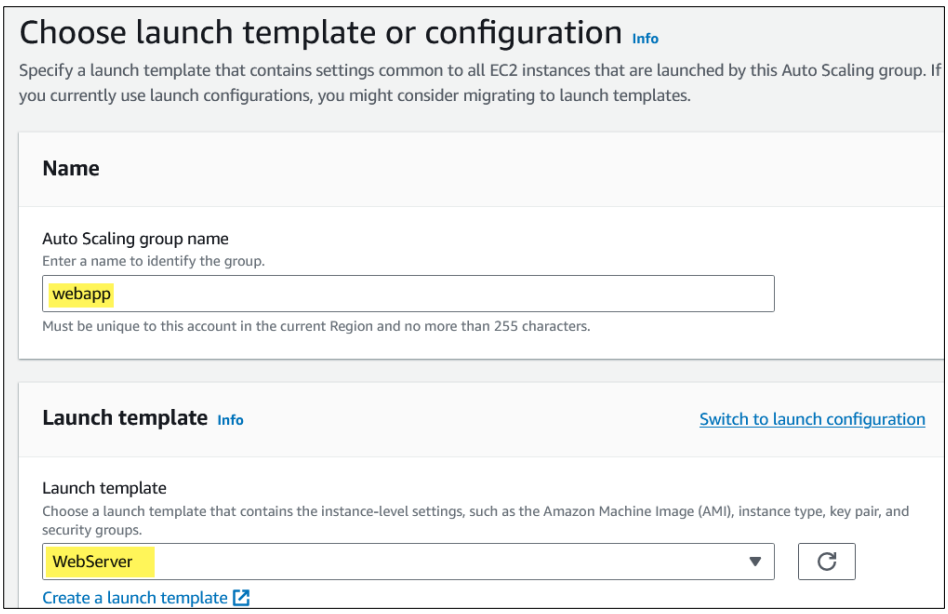
Select Listeners and routing, Select the Target Group which we have created at the step 1



Click on **Create load balancer**



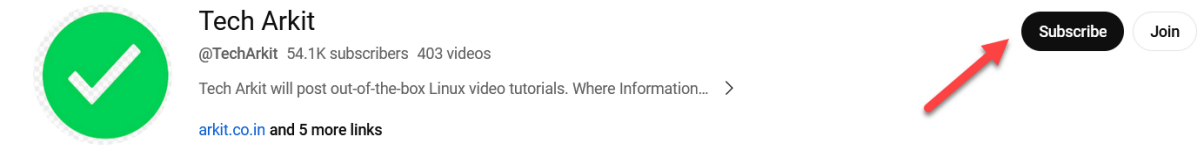
Create Auto Scaling Groups

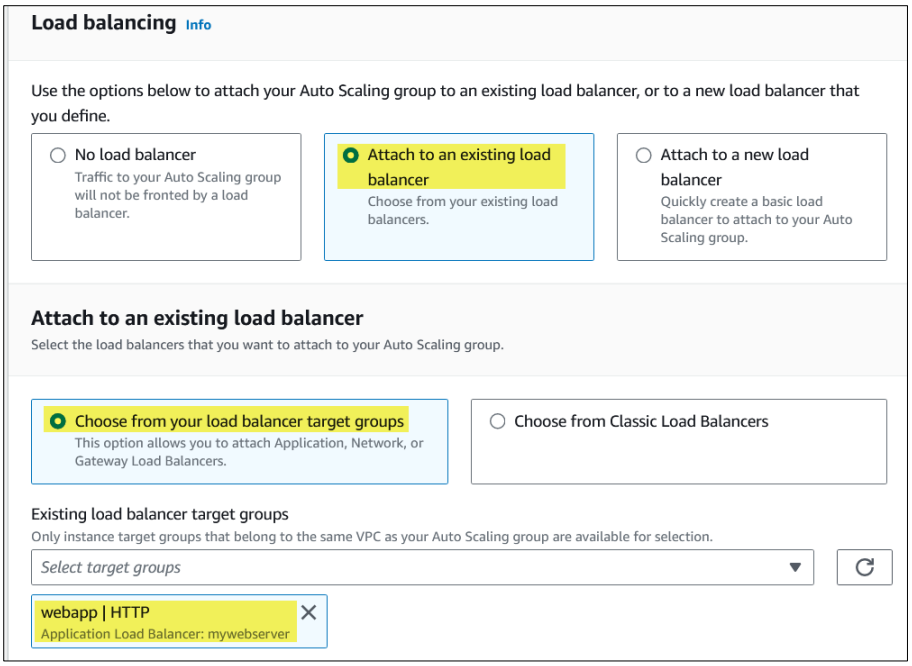


Click **Next**

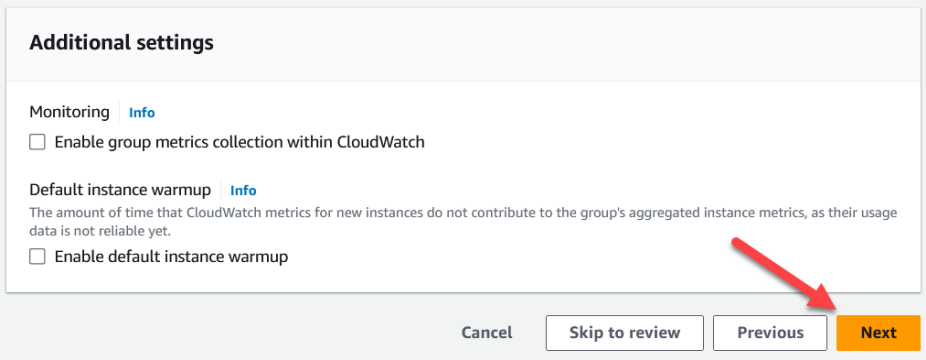
Select VPC settings and Subnets

Click **Next**

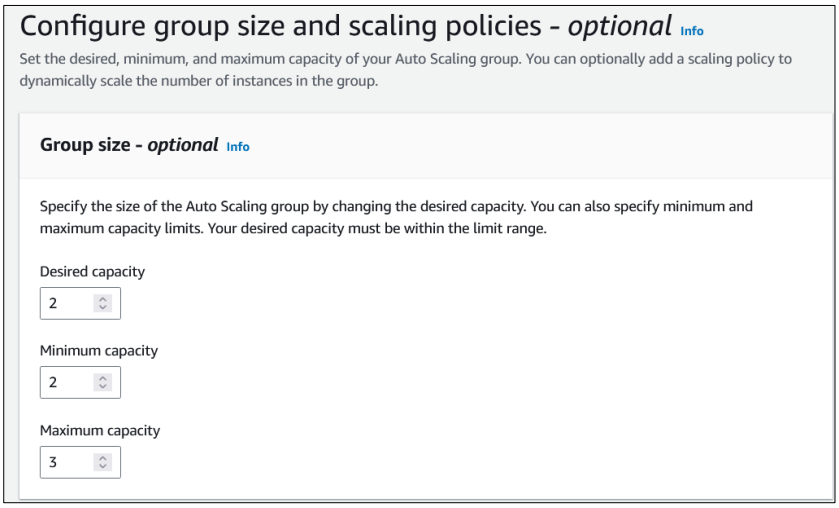




Now select the load balancing since we already created the load balancer in the previous step.



Click **Next**



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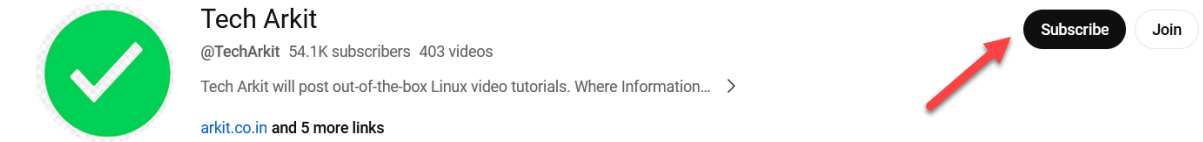
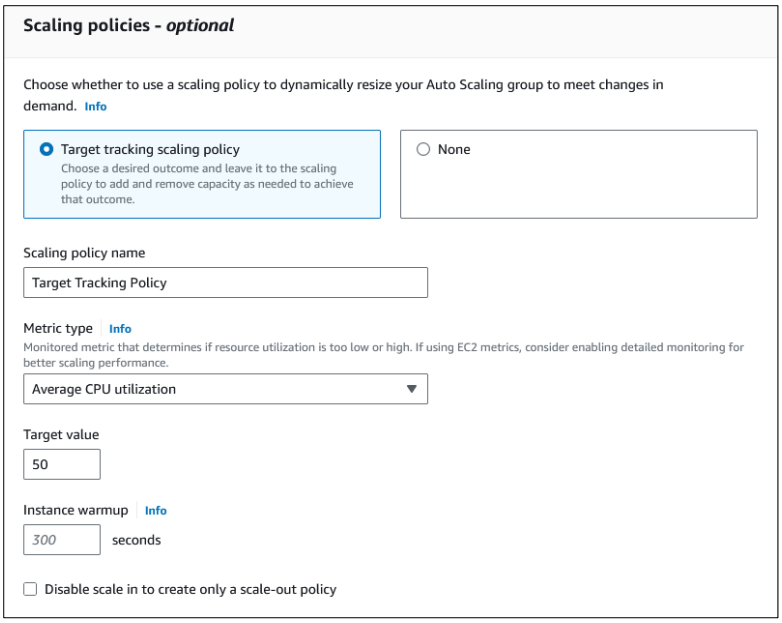
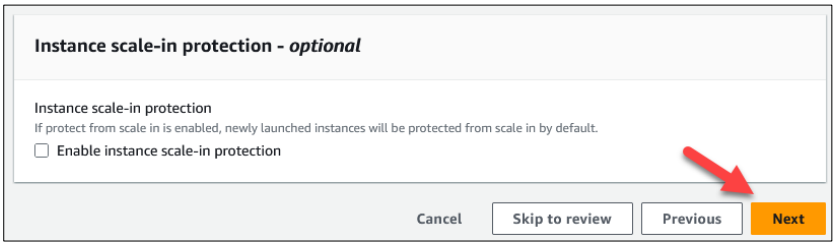
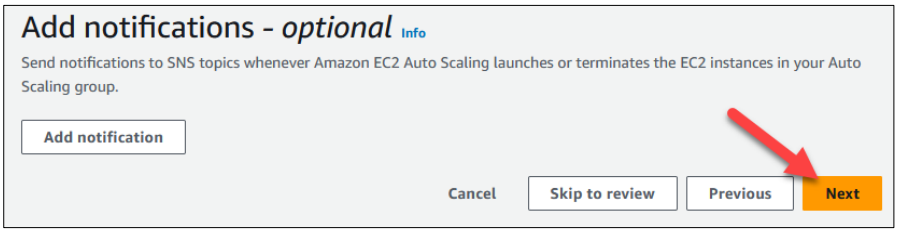




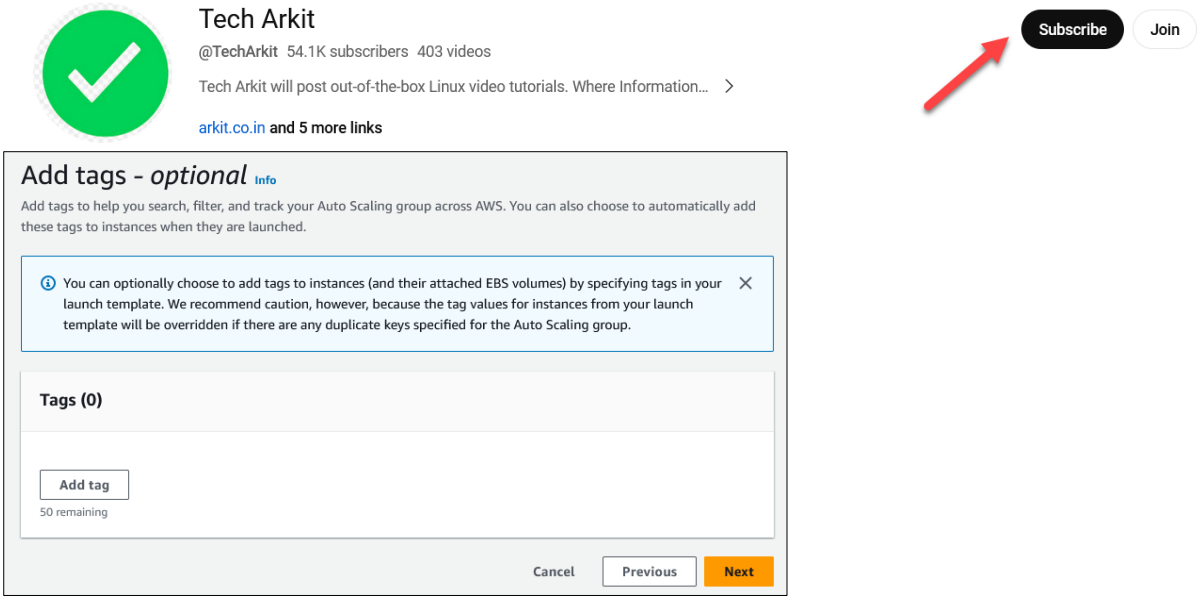


Click **Next**

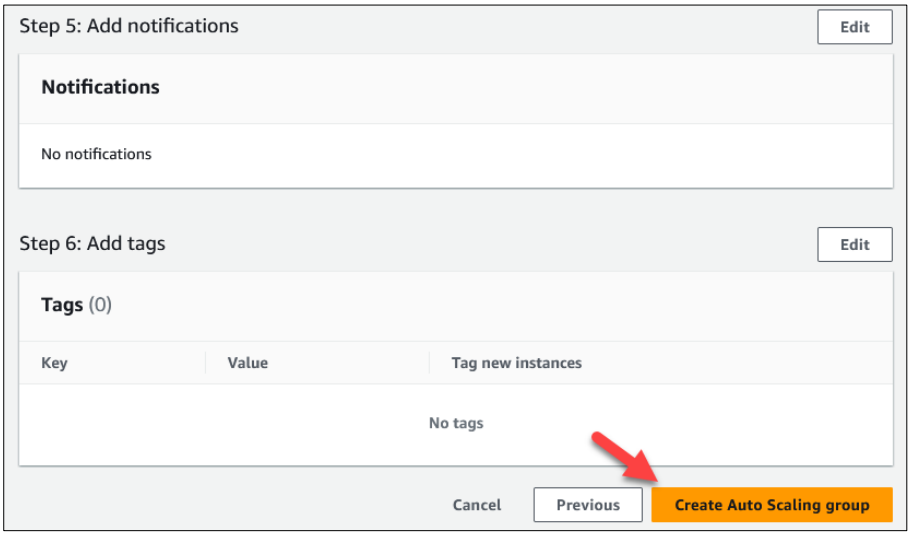


Click **Next**

Add tags if required

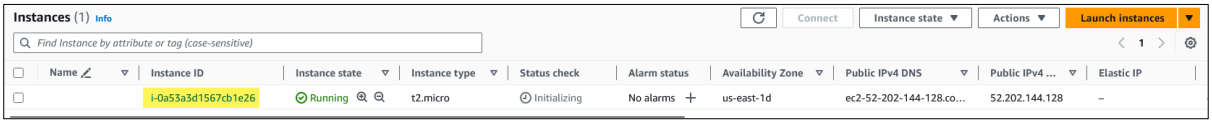


Click **Next**



Verify the details and Click on "**Create Auto Scaling group**"

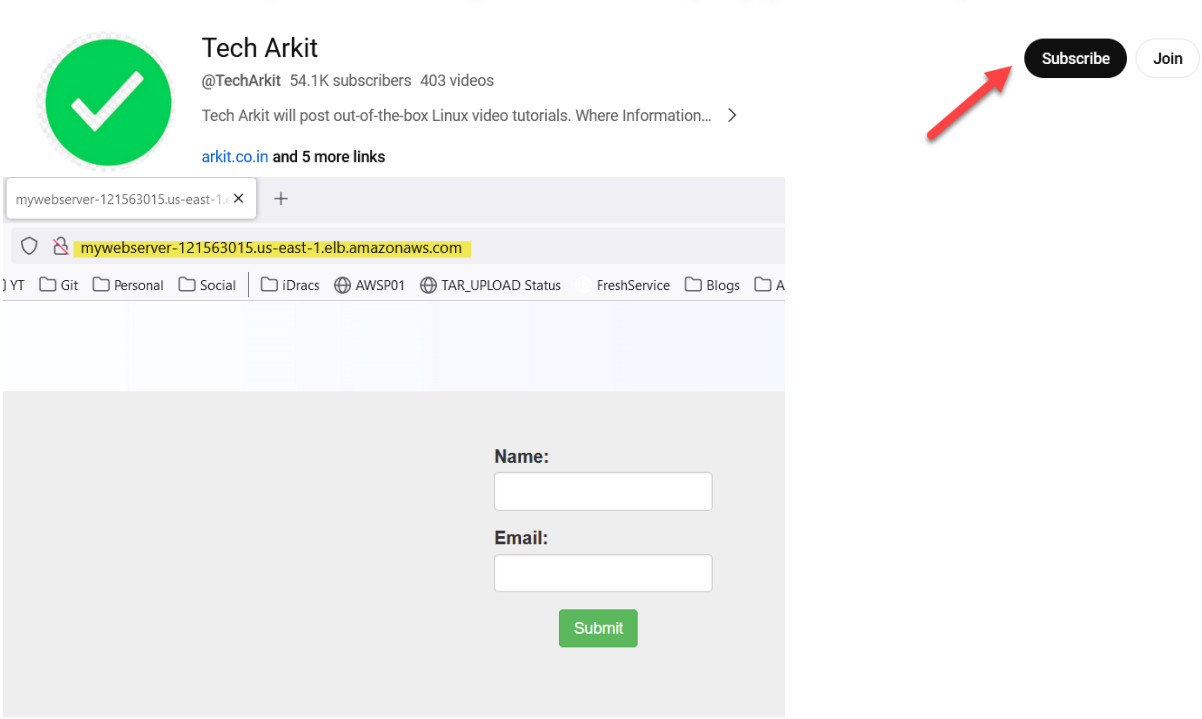
After the successful creation of the Auto Scaling Group, it will auto-provision the Instances required.



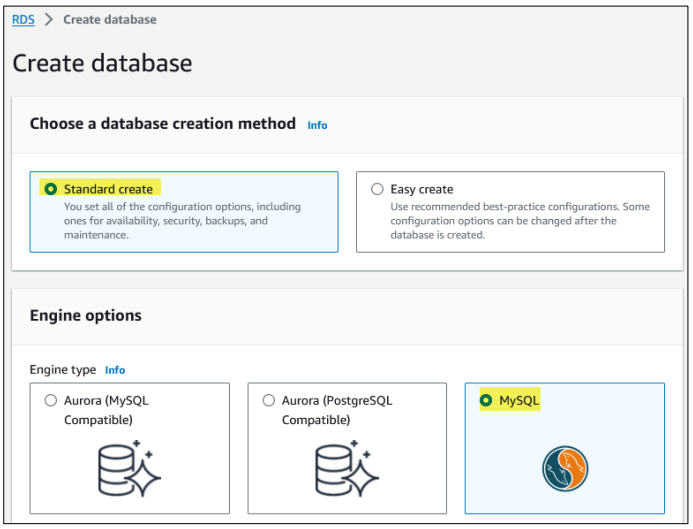
Now try to access the Load Balancer URL

http://mywebserver-121563015.us-east-1.elb.amazonaws.com

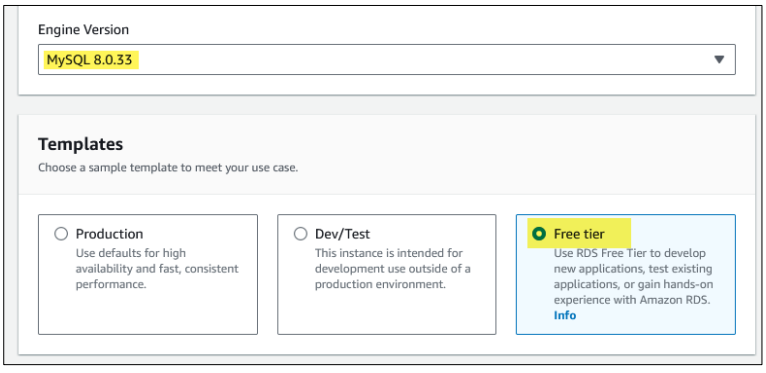
https://www.youtube.com/techarkit and https://arkit.co.in



Now Let's spin up the RDS instance, to resolve the Database error.

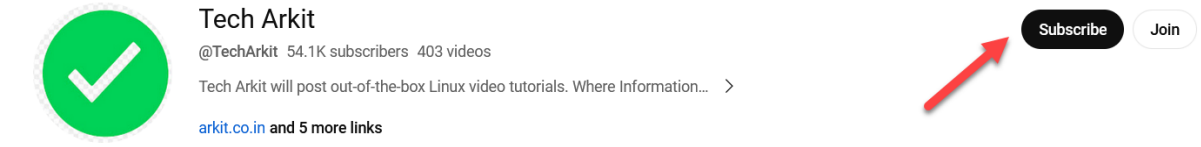


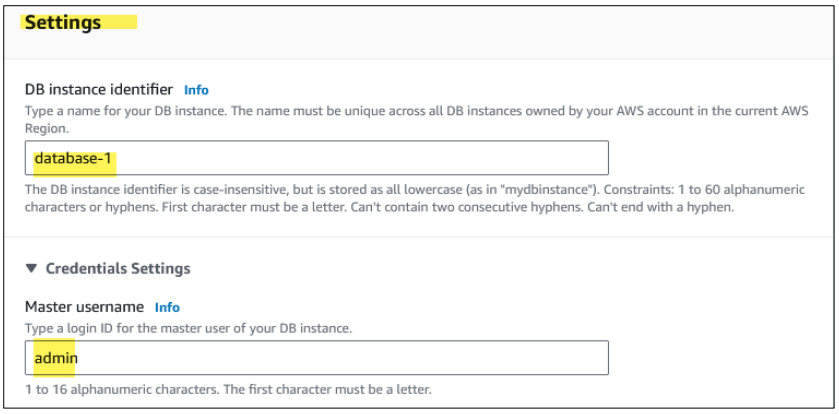
Select Standard Create and MySQL

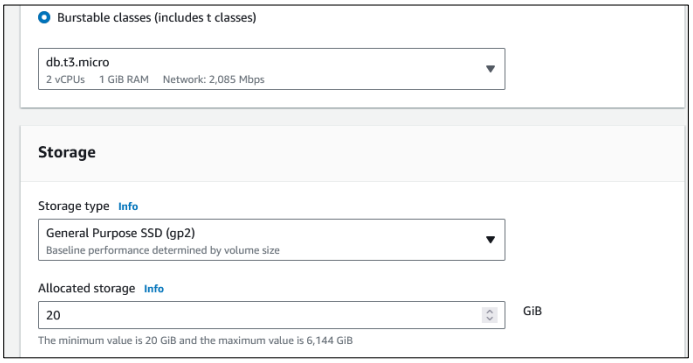


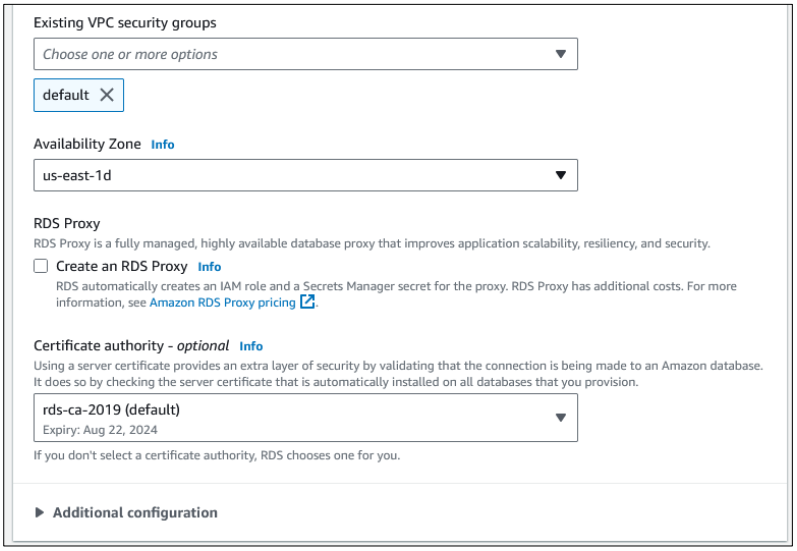
Select engine version as MySQL 8.0.33 for compatibility and Free Tier

https://www.youtube.com/techarkit and https://arkit.co.in



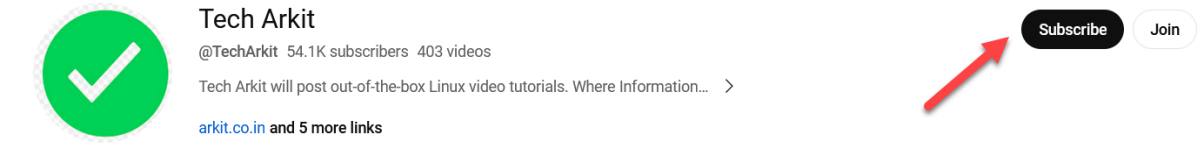


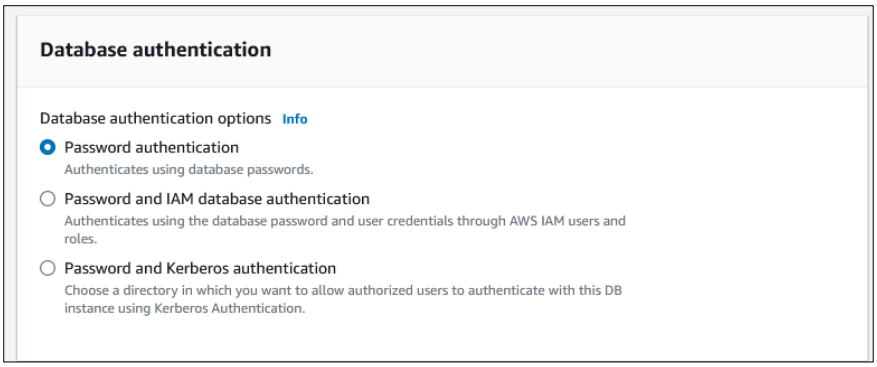




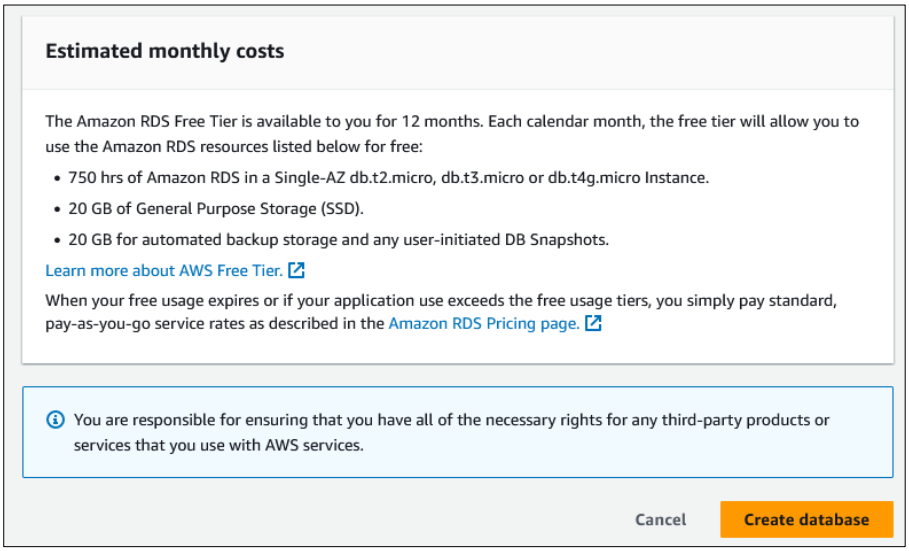
Select Security Group, Availability Zone as us-east-1d (My EC2 instance is in the same AZ)

https://www.youtube.com/techarkit and https://arkit.co.in

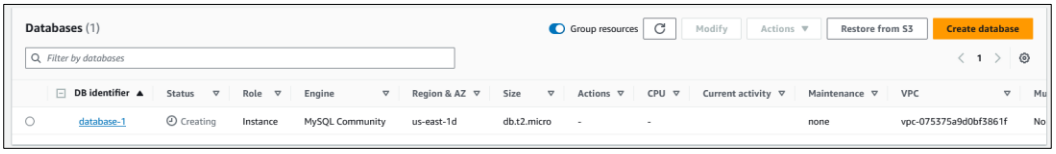


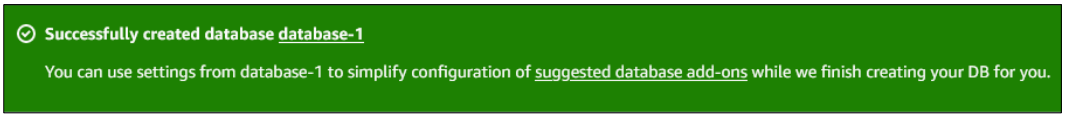


Select Password Authentication

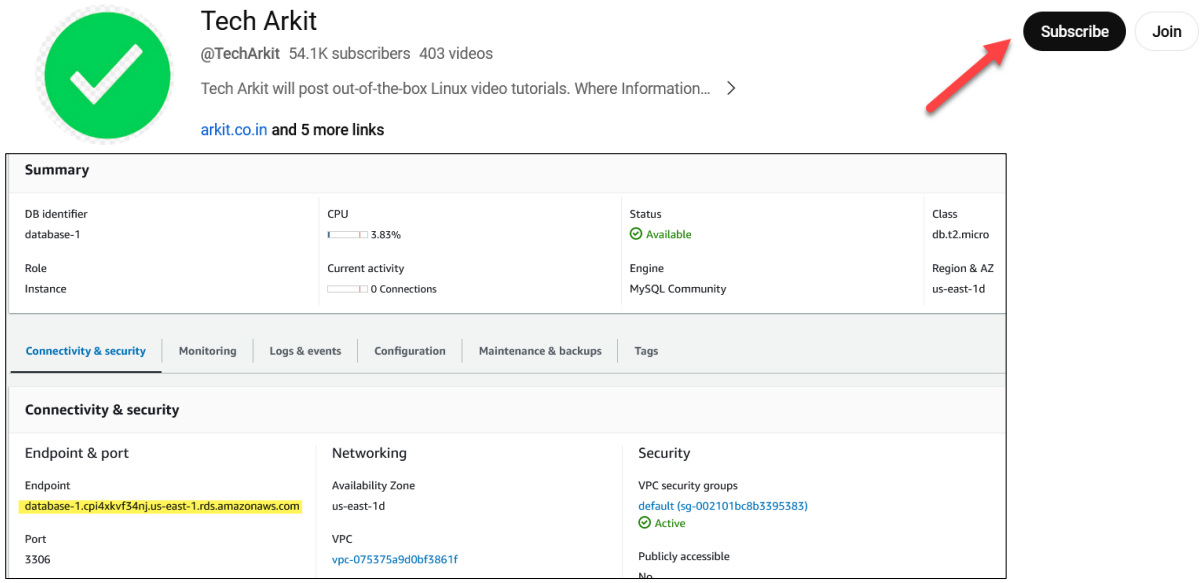


Click “**Create database**”





https://www.youtube.com/techarkit and https://arkit.co.in



Connect to the RDS instance using MySQL client and create the database.

```
ubuntu@ip-172-31-43-251:~$ mysql -h database-1.cpi4xkvf34nj.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 16
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> create database intel;
Query OK, 1 row affected (0.00 sec)

mysql> use intel;
Database changed
mysql> create table data(firstname varchar(21),email varchar(21));
Query OK, 0 rows affected (0.02 sec)

mysql> exit;
Bye
```

```
CREATE USER 'intel'@'database-1.cpi4xkvf34nj.us-east-1.rds.amazonaws.com' IDENTIFIED BY 'intel123';
```

```
GRANT CREATE, ALTER, DROP, INSERT, UPDATE, DELETE, SELECT, REFERENCES, RELOAD on *.* TO 'intel'@'database-1.cpi4xkvf34nj.us-east-1.rds.amazonaws.com' WITH GRANT OPTION;
```

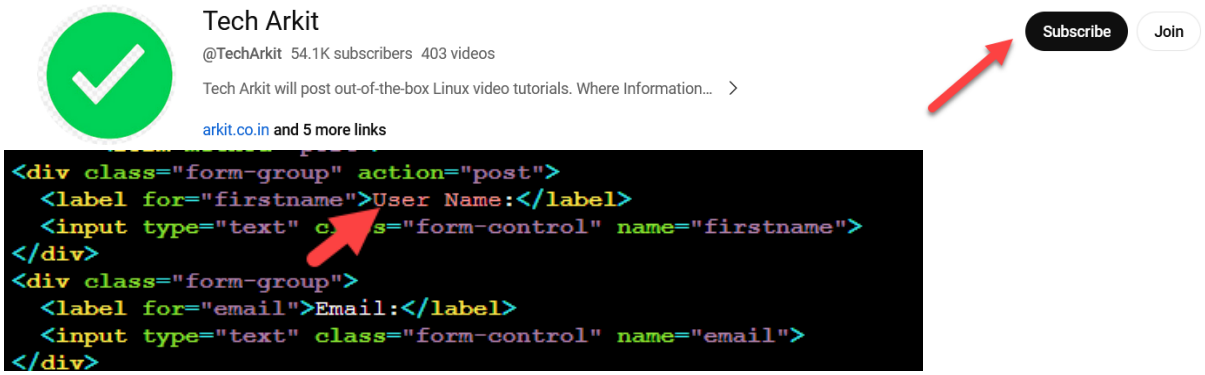
```
mysql>
mysql> CREATE USER 'intel'@'database-1.cpi4xkvf34nj.us-east-1.rds.amazonaws.com' IDENTIFIED BY 'intel123';
Query OK, 0 rows affected (0.01 sec)

mysql> GRANT CREATE, ALTER, DROP, INSERT, UPDATE, DELETE, SELECT, REFERENCES, RELOAD on *.* TO 'intel'@'database-1.cpi4xkvf34nj.us-east-1.rds.amazonaws.com' WITH GRANT OPTION;
Query OK, 0 rows affected (0.00 sec)
```

Update the Git Code

Now edit the GitHub Repository code and update the Instance details.

```php
<?php
$firstname=$_POST['firstname'];
$email=$_POST['email'];
$servername = "database-1.cpi4xkvf34nj.us-east-1.rds.amazonaws.com";
$username = "intel";
$password = "intel123";
$db = "intel";
// Create connection
$conn = new mysqli($servername, $username, $password, $db);
```

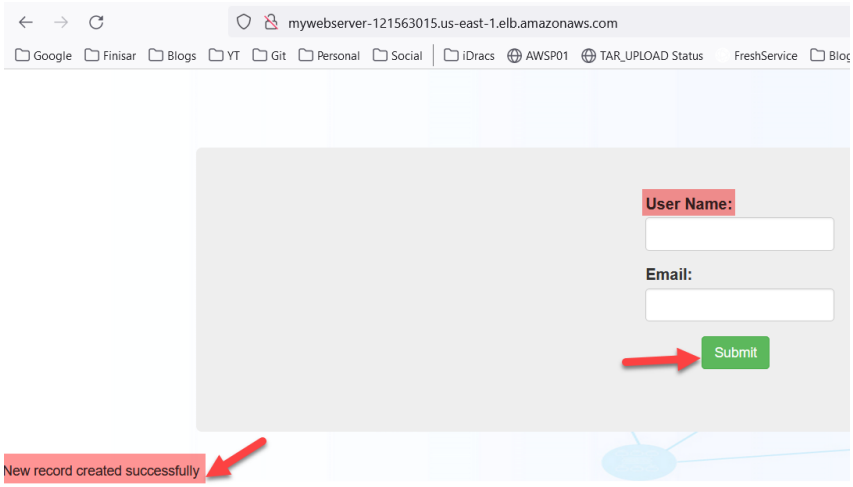
https://www.youtube.com/techarkit and https://arkit.co.in



Commit the repository.

Terminate the existing EC2 instance Autoscaling group will deploy the new instances with the correct authentication details.

Updated the Website details



Submitted the details it can write successfully.

That concludes the project.

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