

**School of Computer Science, Engineering and Applications(SCSEA)**

**B.C.A. TY (CCSA)**

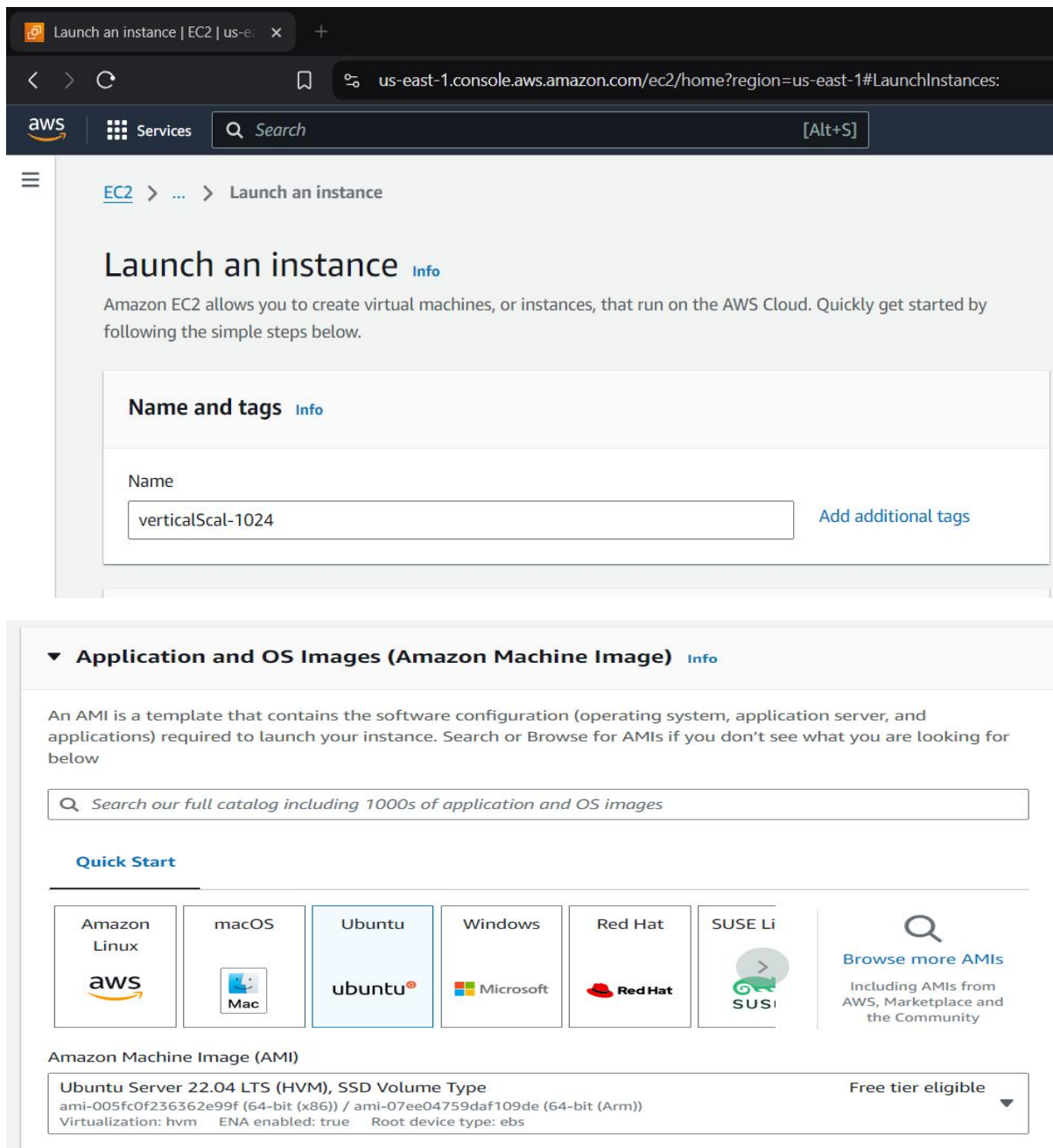
**Subject : Infrastructure Orchestration (P)**

**Name of the Student:** Shrushti Krishna Shrivastav

**PRN:** 20220801024

**Title of Practical :** Vertical Scaling: Upgrading EC2 Instance Types for Better Performance

**STEP1: Login and launch one ec2 instance**



Launch an instance | EC2 | us-east-1

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

aws Services Search [Alt+S]

EC2 > ... > Launch an instance

## Launch an instance [Info](#)

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

### Name and tags [Info](#)

Name

[Add additional tags](#)

### ▼ Application and OS Images (Amazon Machine Image) [Info](#)

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

#### Quick Start

Amazon Linux  
aws

macOS  
Mac

Ubuntu  
ubuntu

Windows  
Microsoft

Red Hat  
Red Hat

SUSE Linux  
SUSE

[Browse more AMIs](#)  
Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

Ubuntu Server 22.04 LTS (HVM), SSD Volume Type  
ami-005fc0f236362e99f (64-bit (x86)) / ami-07ee04759daf109de (64-bit (Arm))  
Virtualization: hvm ENA enabled: true Root device type: ebs

Free tier eligible ▼



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▼ **Instance type** [Info](#) | [Get advice](#)

Instance type

t2.micro

Free tier eligible

Family: t2 1 vCPU 1 GiB Memory Current generation: true  
On-Demand Linux base pricing: 0.0124 USD per Hour  
On-Demand Windows base pricing: 0.017 USD per Hour  
On-Demand RHEL base pricing: 0.0268 USD per Hour  
On-Demand Ubuntu Pro base pricing: 0.0142 USD per Hour  
On-Demand SUSE base pricing: 0.0124 USD per Hour

☐ All generations

[Compare instance types](#)

Additional costs apply for AMIs with pre-installed software

▼ **Key pair (login)** [Info](#)

You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - *required*

IOdemo1

[Create new key pair](#)

▼ **Network settings** [Info](#)

Network [Info](#)

vpc-0662aa9456cd34d0a | -defaultVPC-

Subnet [Info](#)

No preference (Default subnet in any availability zone)

Auto-assign public IP [Info](#)

Enable

Additional charges apply when outside of free tier allowance

Firewall (security groups) [Info](#)

A security group is a set of firewall rules that control the traffic for your instance. Add rules to all instance.

☐ Create security group

☒ Select existing security group

Common security groups [Info](#)

Select security groups

SG-CCSA-TY-1024 sg-08f4e0d7ab53772a8 ✕

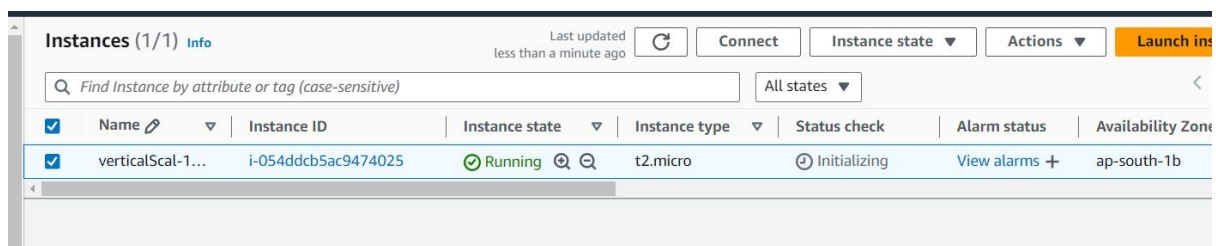
VPC: vpc-0662aa9456cd34d0a

Security groups that you add or remove here will be added to or removed from all your network

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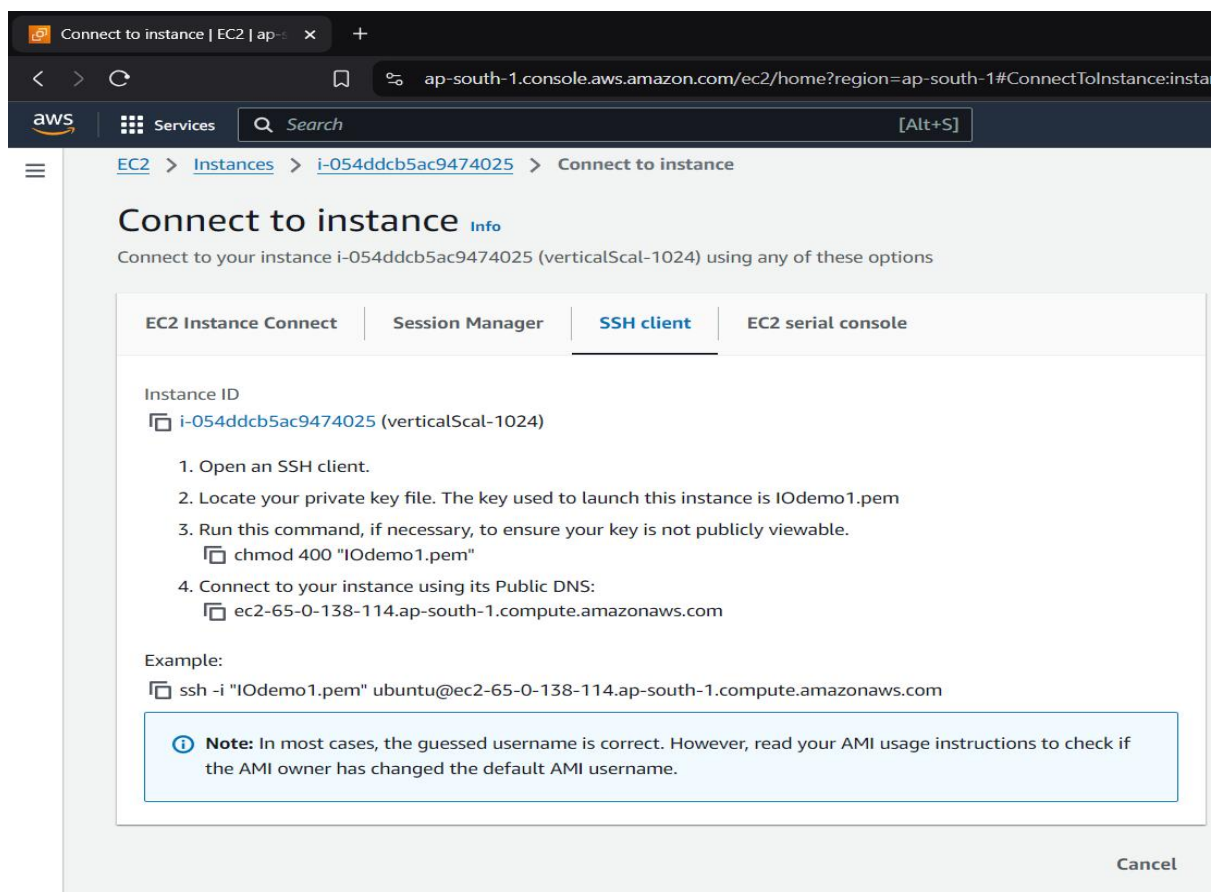
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The screenshot shows the AWS Management Console 'Instances' page. It displays a table with columns: Name, Instance ID, Instance state, Instance type, Status check, Alarm status, and Availability Zone. One instance is listed: 'verticalScal-1...' with ID 'i-054ddcb5ac9474025', state 'Running', type 't2.micro', and status 'Initializing'.

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
verticalScal-1...	i-054ddcb5ac9474025	Running	t2.micro	Initializing	View alarms +	ap-south-1b

Once instance is launched connect via SSH



The screenshot shows the 'Connect to instance' page in the AWS console. It provides instructions for connecting to the instance 'i-054ddcb5ac9474025' (verticalScal-1024) using an SSH client. The instructions include: 1. Open an SSH client. 2. Locate your private key file (IOdemo1.pem). 3. Run the command 'chmod 400 "IOdemo1.pem"'. 4. Connect to the instance using its Public DNS: 'ec2-65-0-138-114.ap-south-1.compute.amazonaws.com'. An example command is provided: 'ssh -i "IOdemo1.pem" ubuntu@ec2-65-0-138-114.ap-south-1.compute.amazonaws.com'. A note states: 'Note: In most cases, the guessed username is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI username.'

Instance ID  
i-054ddcb5ac9474025 (verticalScal-1024)

1. Open an SSH client.
2. Locate your private key file. The key used to launch this instance is IOdemo1.pem
3. Run this command, if necessary, to ensure your key is not publicly viewable.  
`chmod 400 "IOdemo1.pem"`
4. Connect to your instance using its Public DNS:  
`ec2-65-0-138-114.ap-south-1.compute.amazonaws.com`

Example:  
`ssh -i "IOdemo1.pem" ubuntu@ec2-65-0-138-114.ap-south-1.compute.amazonaws.com`

**Note:** In most cases, the guessed username is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI username.

Cancel

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**STEP2: connect via SSH**

Go to the path where your keypair is downloaded

```
C:\Users\shrushti\OneDrive\Desktop>
C:\Users\shrushti\OneDrive\Desktop>ssh -i "I0demo1.pem" ubuntu@ec2-65-0-138-114.ap-south-1.compute.amazonaws.com
The authenticity of host 'ec2-65-0-138-114.ap-south-1.compute.amazonaws.com (65.0.138.114)' can't be established.
ED25519 key fingerprint is SHA256:g0U2Qb3Xvw87qDD5AI0tXijDLwbyi7Gk/TPeGaiGlPc.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-65-0-138-114.ap-south-1.compute.amazonaws.com' (ED25519) to the list of known hosts.
Welcome to Ubuntu 22.04.5 LTS (GNU/Linux 6.8.0-1015-aws x86_64)
```

Now update and then install apache2 server

```
ubuntu@ip-172-31-10-188:~$
ubuntu@ip-172-31-10-188:~$ sudo apt-get update -y
Hit:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease
```

```
ubuntu@ip-172-31-10-188:~$
ubuntu@ip-172-31-10-188:~$ sudo apt-get install apache2 -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
```

Check if apache2 is installed : go to instance and paste public ipv4 address on browser--



EC2 > Instances > i-054ddcb5ac9474025

**Instance summary for i-054ddcb5ac9474025 (verticalScal-1024)** Info

Updated less than a minute ago

Instance ID  
i-054ddcb5ac9474025

IPv6 address  
-

Public IPv4 address copied  
65.0.138.114 | open address

Instance state  
Running



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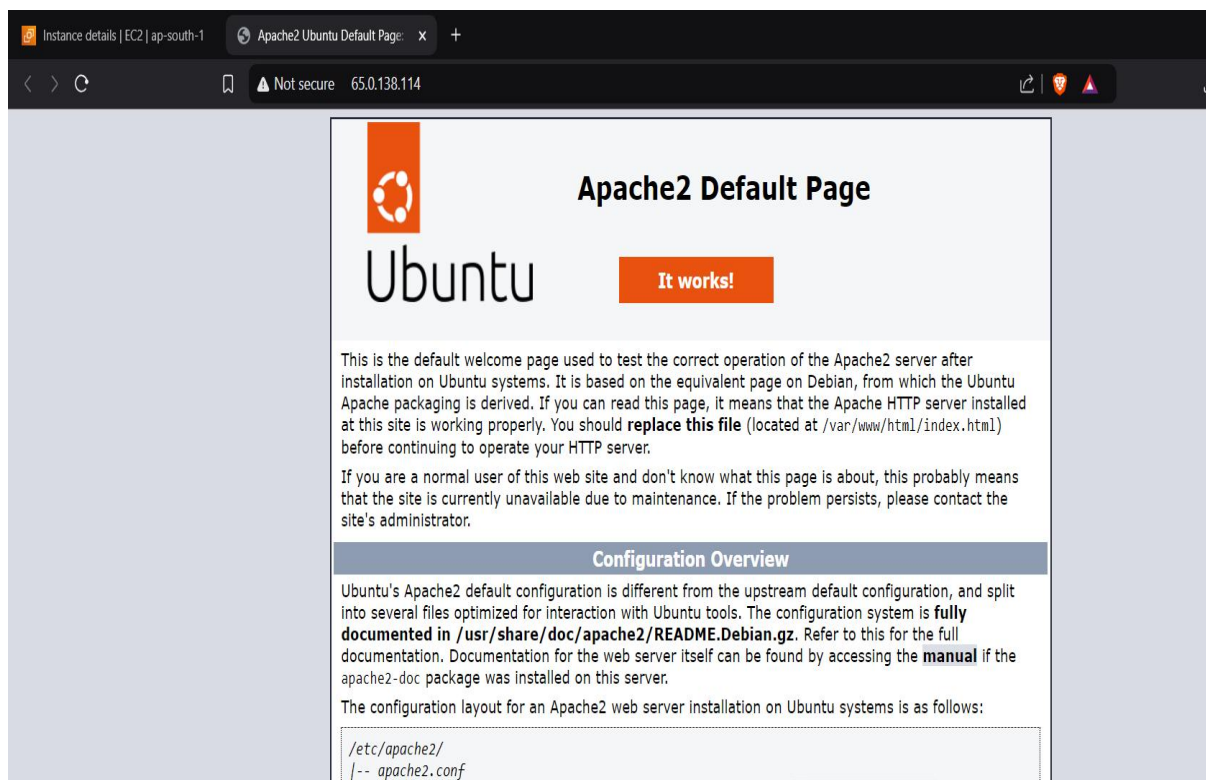
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Ensure its http only (in Security Group we gave permission for http only and not https)



You can also check through cmd via command: systemctl status apache2

```
ubuntu@ip-172-31-10-188:~$ systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
   Active: active (running) since Wed 2024-11-20 10:47:02 UTC; 1min 31s ago
     Docs: https://httpd.apache.org/docs/2.4/
    Main PID: 2165 (apache2)
      Tasks: 55 (limit: 1130)
     Memory: 5.2M
        CPU: 32ms
    CGroup: /system.slice/apache2.service
            └─2165 /usr/sbin/apache2 -k start
```

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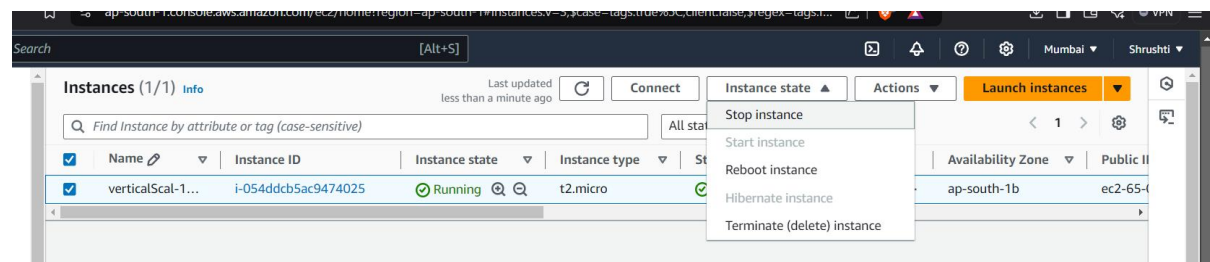
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**STEP3: create one file**

```
ubuntu@ip-172-31-10-188:~$ touch file1.txt
ubuntu@ip-172-31-10-188:~$ ls
file1.txt
ubuntu@ip-172-31-10-188:~$
```

**STEP4: change the instance type from t2.micro to t2.medium**

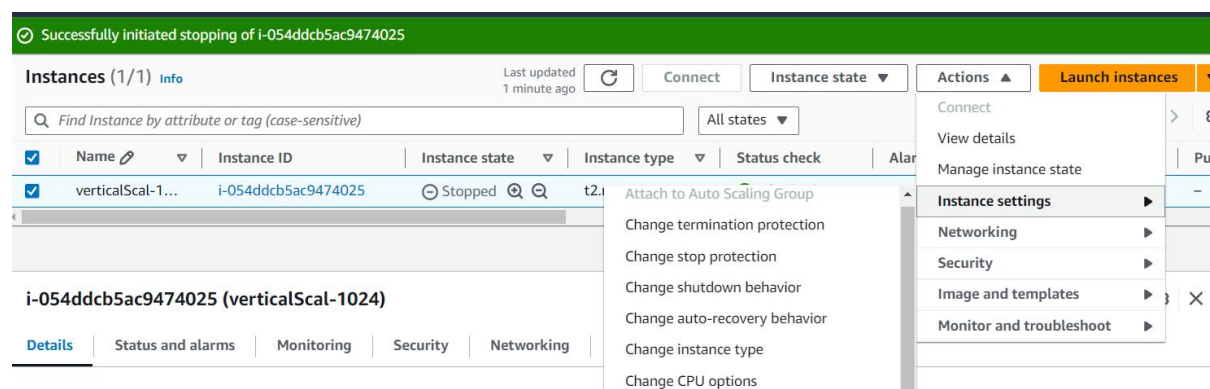
First stop the instance to change the instance type



Cmd msg once instance is stopped

```
ubuntu@ip-172-31-10-188:~$ Connection to ec2-65-0-138-114.ap-south-1.compute.amazonaws.com closed by remote host.
Connection to ec2-65-0-138-114.ap-south-1.compute.amazonaws.com closed.
```

Select instance--action--instance setting--change instance type

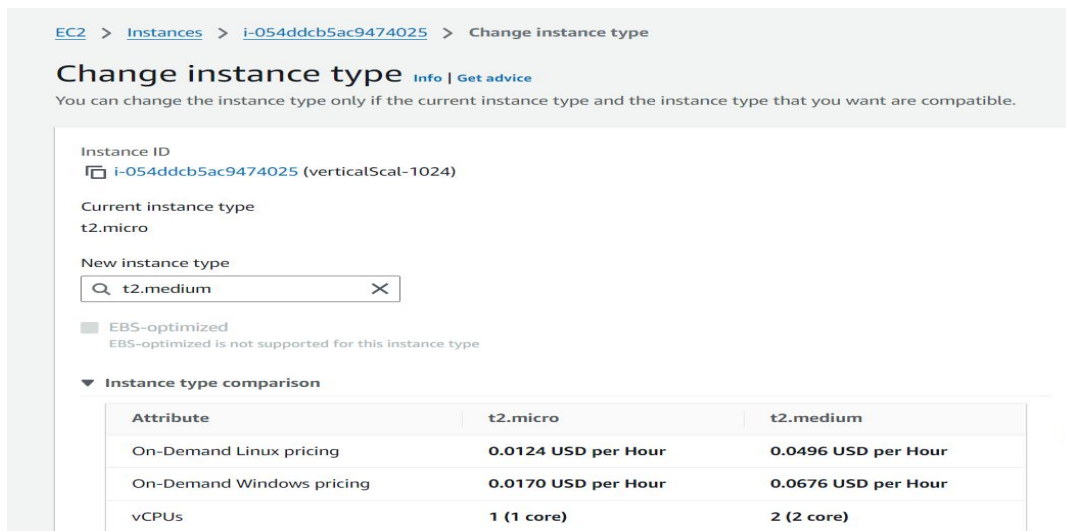


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Select new instance as t3.micro

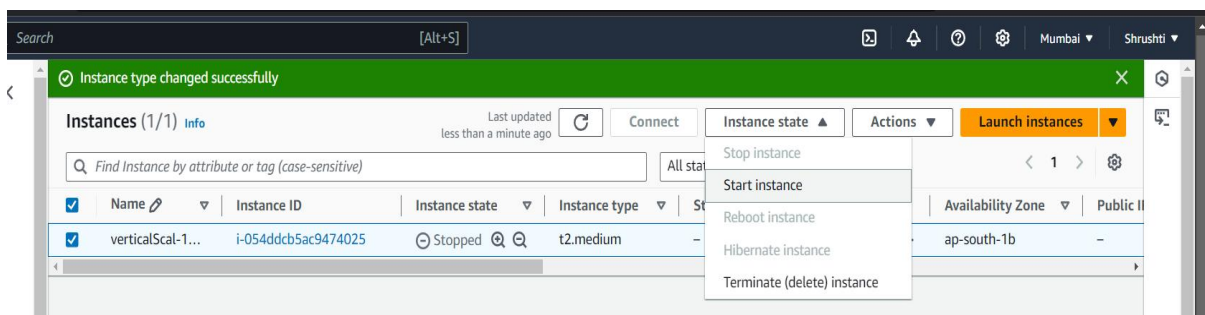


The screenshot shows the 'Change instance type' page in the AWS Management Console. The instance ID is i-054ddcb5ac9474025. The current instance type is t2.micro. The new instance type is set to t2.medium. A table compares the attributes of t2.micro and t2.medium.

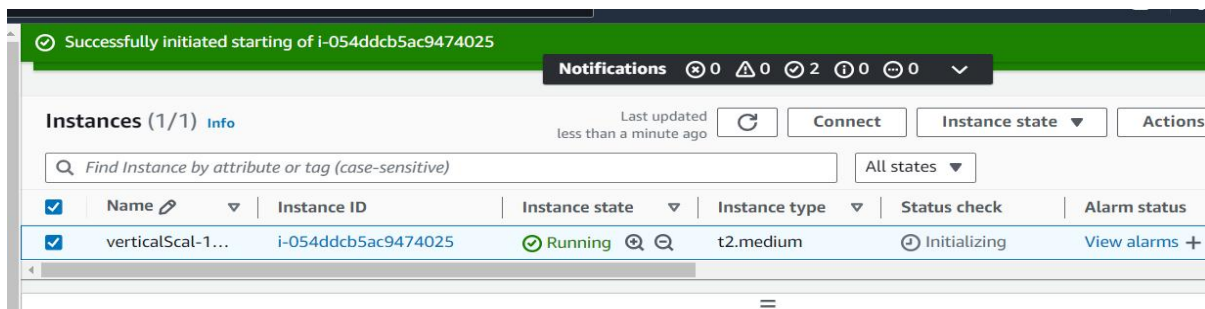
Attribute	t2.micro	t2.medium
On-Demand Linux pricing	0.0124 USD per Hour	0.0496 USD per Hour
On-Demand Windows pricing	0.0170 USD per Hour	0.0676 USD per Hour
vCPUs	1 (1 core)	2 (2 core)

Save changes.

Now start instance and ensure instance type is changed



The screenshot shows the 'Instances' page in the AWS Management Console. A notification at the top states 'Instance type changed successfully'. The instance i-054ddcb5ac9474025 is shown with a state of 'Stopped' and type 't2.medium'. The 'Instance state' dropdown menu is open, showing options like 'Start instance', 'Reboot instance', etc.



The screenshot shows the 'Instances' page in the AWS Management Console. A notification at the top states 'Successfully initiated starting of i-054ddcb5ac9474025'. The instance i-054ddcb5ac9474025 is shown with a state of 'Running' and type 't2.medium'. The 'Status check' is 'Initializing'.

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Again connect via ssh--

List the files to ensure your data is still safe and not lost.

```
Last login: Wed Nov 20 10:43:59 2024 from 152.57.114.123
ubuntu@ip-172-31-10-188:~$
ubuntu@ip-172-31-10-188:~$
ubuntu@ip-172-31-10-188:~$
ubuntu@ip-172-31-10-188:~$ ls
file1.txt
ubuntu@ip-172-31-10-188:~$
```

Check if apache2 is also running.

```
ubuntu@ip-172-31-10-188:~$ systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: en
   Active: active (running) since Wed 2024-11-20 10:57:05 UTC; 2min 51s ago
     Docs: https://httpd.apache.org/docs/2.4/
   Process: 374 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
  Main PID: 458 (apache2)
    Tasks: 55 (limit: 4676)
   Memory: 8.0M
      CPU: 42ms
   CGroup: /system.slice/apache2.service
           └─458 /usr/sbin/apache2 -k start
             └─466 /usr/sbin/apache2 -k start
               └─467 /usr/sbin/apache2 -k start
```

