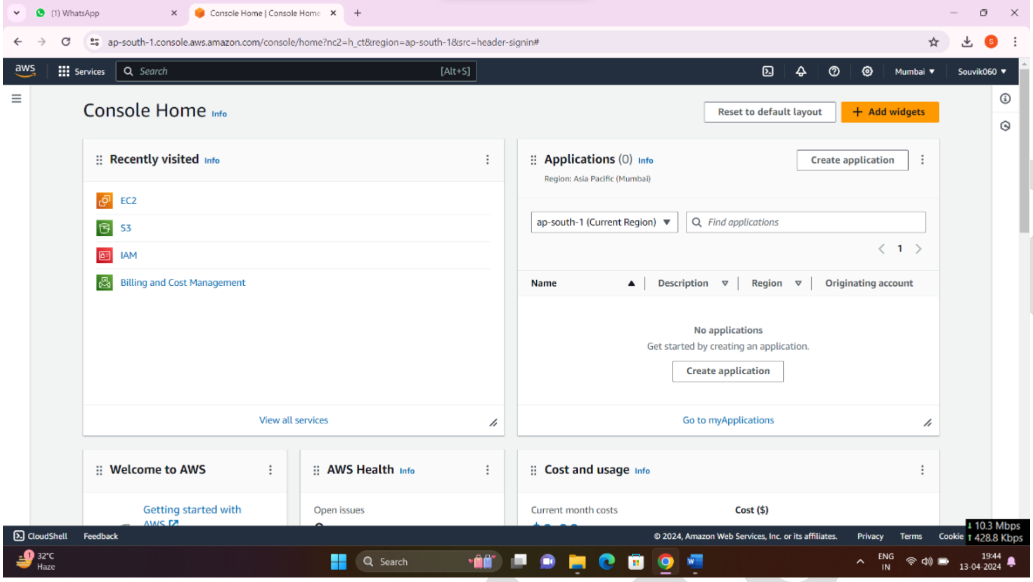
Assignment 10

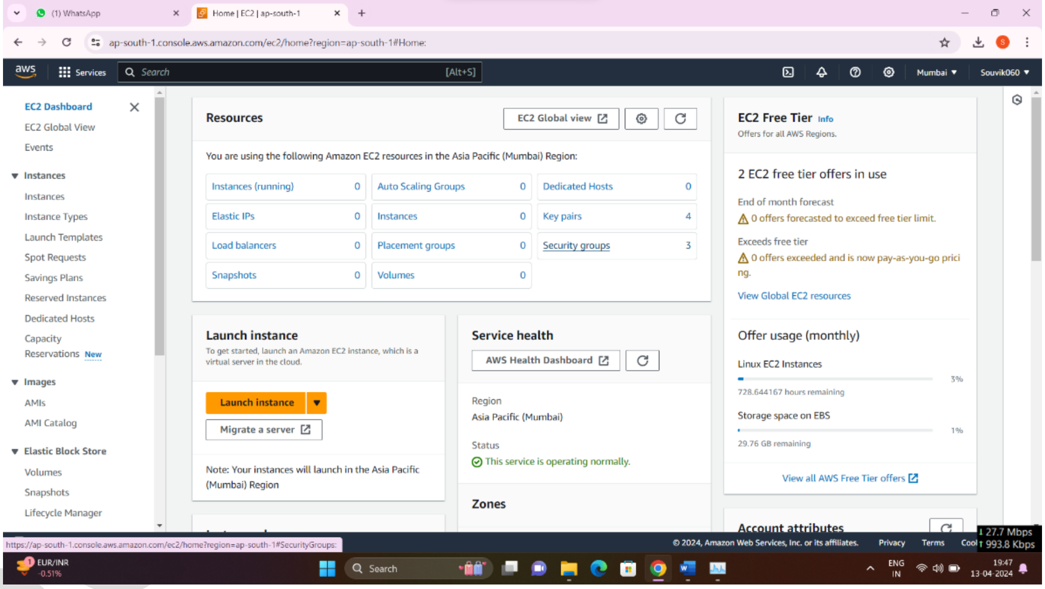
Problem Statement: Deploy a project from GitHub to EC2 by creating a new security group and user data.

Procedure:

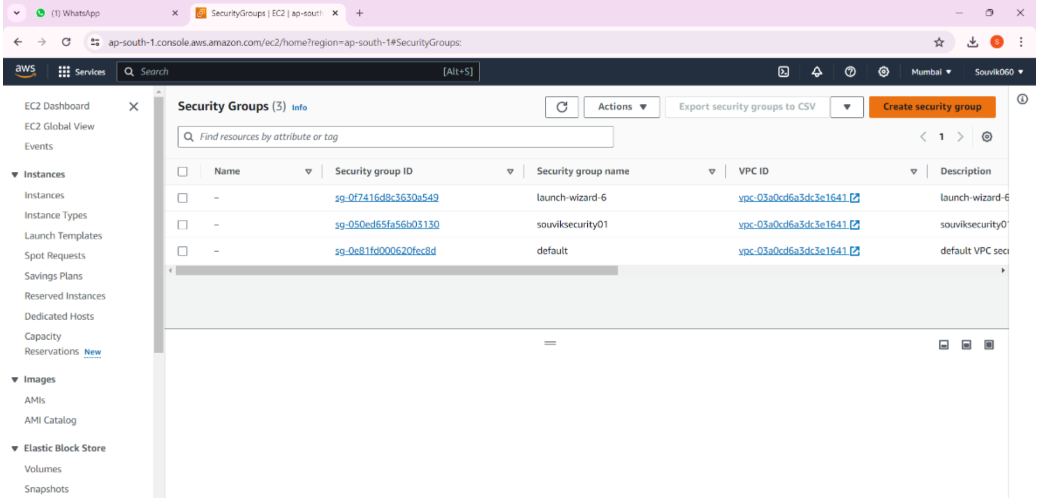
1. Access your AWS console and search for EC2, then proceed to click on the first option.



2. Now, Click on "Security Groups".

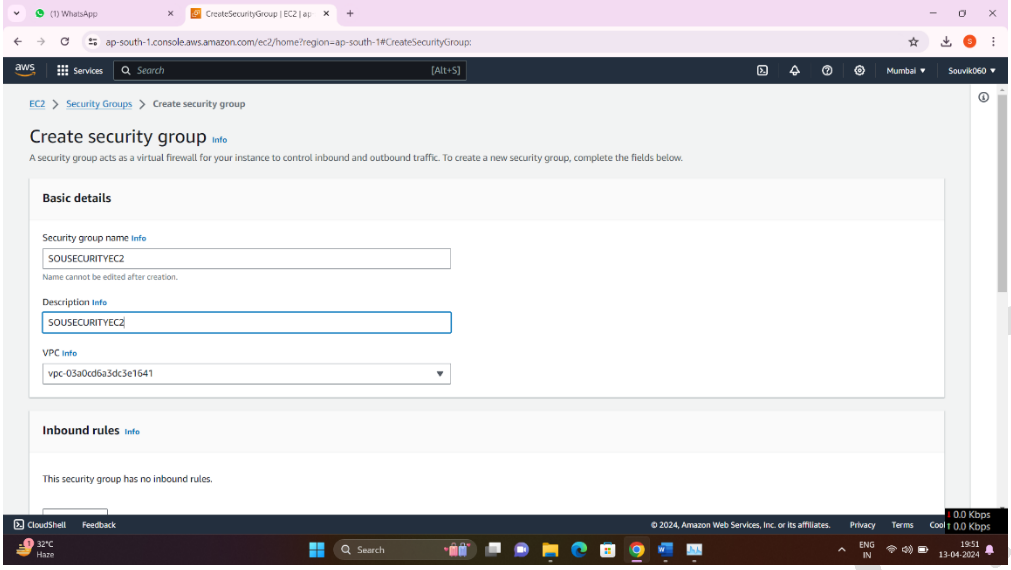


3. Now click on “Create security Group”.



Name	Security group ID	Security group name	VPC ID	Description
–	sg-0f7416d8c3630a549	launch-wizard-6	vpc-03a0cd6a3dc3e1641	launch-wizard-6
–	sg-050ed65fa56b03130	souviksecurity01	vpc-03a0cd6a3dc3e1641	souviksecurity0
–	sg-0e81fd000620fec8d	default	vpc-03a0cd6a3dc3e1641	default VPC sec

4. Fill up the name and description (same as name) of the security group.



EC2 > Security Groups > Create security group

Create security group Info

A security group acts as a virtual firewall for your instance to control inbound and outbound traffic. To create a new security group, complete the fields below.

Basic details

Security group name Info: SOUSECURITYEC2

Name cannot be edited after creation.

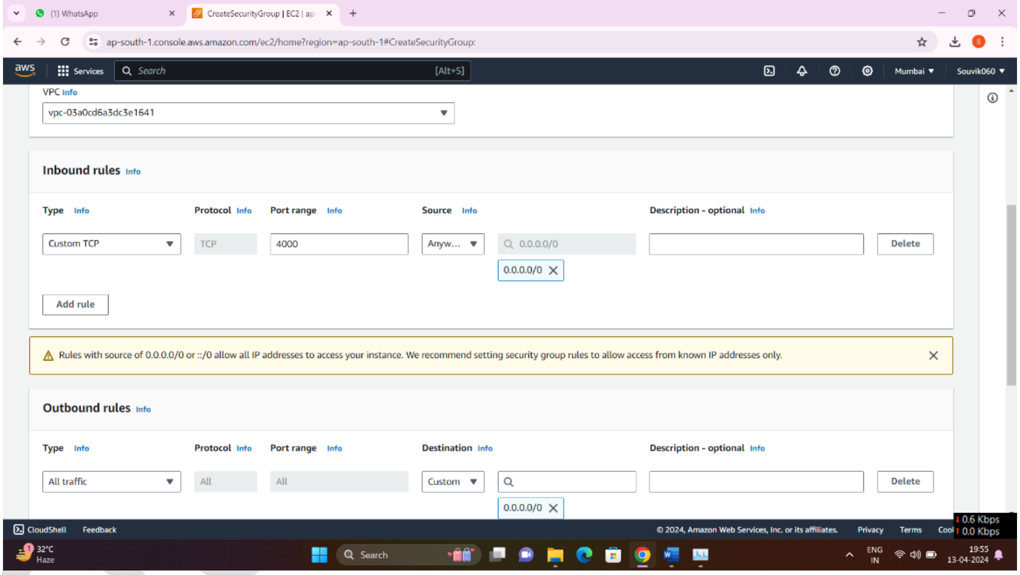
Description Info: SOUSECURITYEC2

VPC Info: vpc-03a0cd6a3dc3e1641

Inbound rules Info

This security group has no inbound rules.

5. Now, scroll down to Inbound Rules and click on “Add rule”. First set the type as Custom TCP, port number as 4000 and select first option in CIDR blocks i.e. “0.0.0.0/0” .



VPC Info: vpc-03a0cd6a3dc3e1641

Inbound rules Info

Type	Protocol	Port range	Source		Description - optional	
Custom TCP	TCP	4000	Anyw...	0.0.0.0/0		Delete

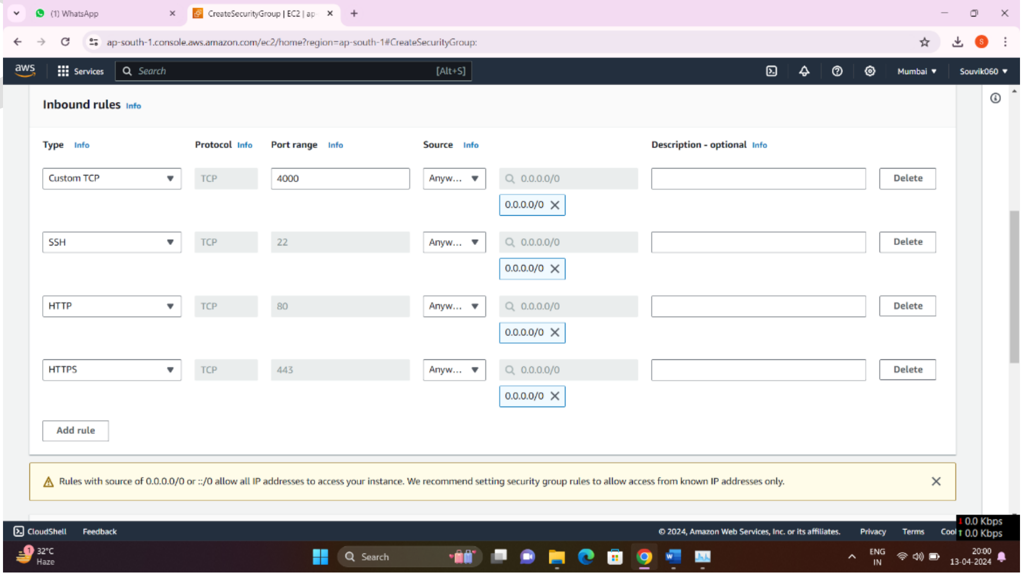
Add rule

Rules with source of 0.0.0.0/0 or ::/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

Outbound rules Info

Type	Protocol	Port range	Destination		Description - optional	
All traffic	All	All	Custom	0.0.0.0/0		Delete

6. Click on “Add rule” again and set type as “SSH” and select first option in CIDR blocks. Repeat this two more times and add rules of type “HTTP” and “HTTPS”.



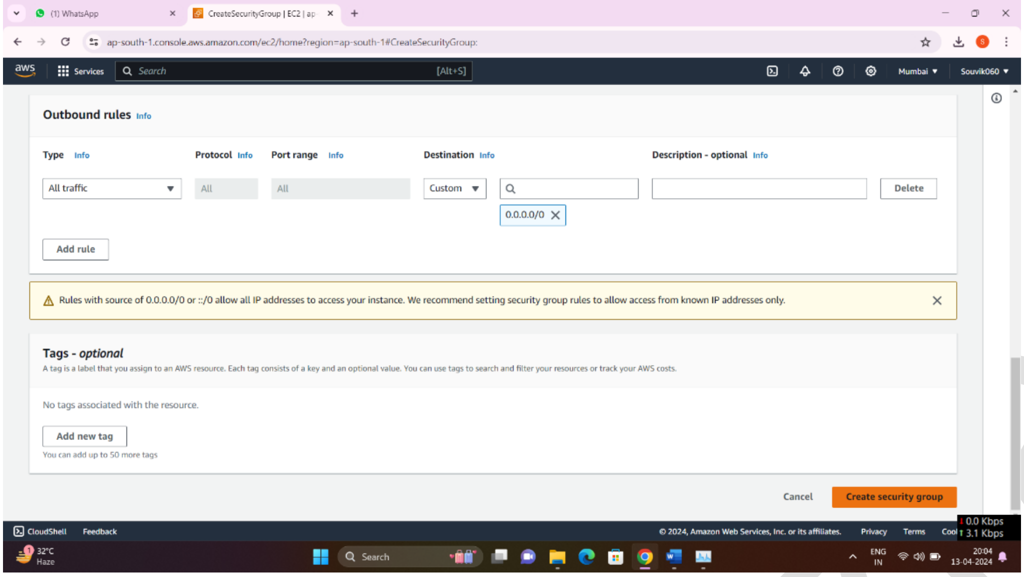
Inbound rules Info

Type	Protocol	Port range	Source		Description - optional	
Custom TCP	TCP	4000	Anyw...	0.0.0.0/0		Delete
SSH	TCP	22	Anyw...	0.0.0.0/0		Delete
HTTP	TCP	80	Anyw...	0.0.0.0/0		Delete
HTTPS	TCP	443	Anyw...	0.0.0.0/0		Delete

Add rule

Rules with source of 0.0.0.0/0 or ::/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

7. Then click on “Create security group”.



ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#CreateSecurityGroup:

Outbound rules Info

Type Info	Protocol Info	Port range Info	Destination Info	Description - optional Info
All traffic	All	All	Custom 0.0.0.0/0	

Add rule

Rules with source of 0.0.0.0/0 or ::/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

Tags - *optional*

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

No tags associated with the resource.

Add new tag

You can add up to 50 more tags

Cancel Create security group

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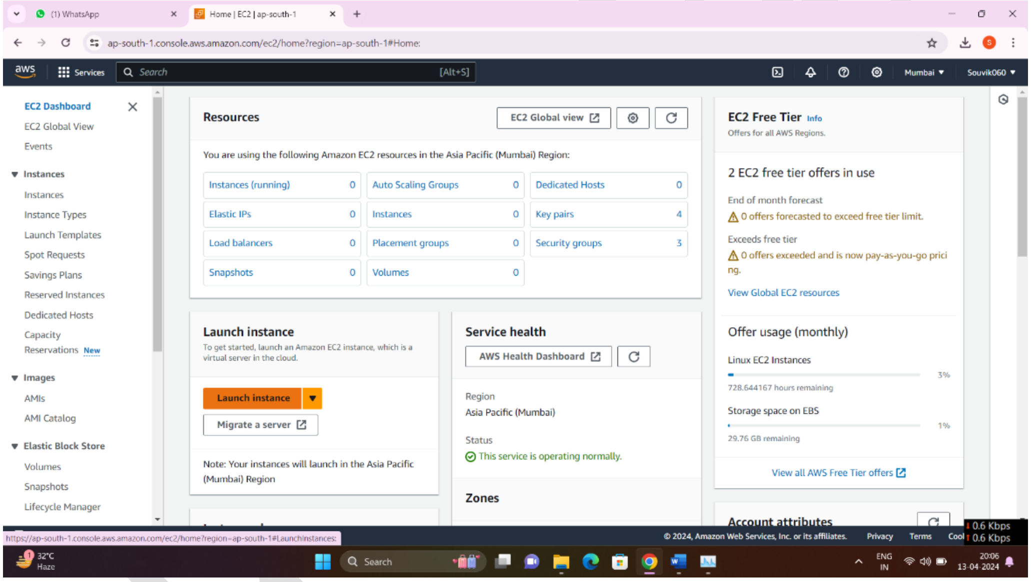
8. Now, go to EC2 dashboard and click on “Launch instance”.



ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#Home:

Resources

You are using the following Amazon EC2 resources in the Asia Pacific (Mumbai) Region:

Instances (running)	0	Auto Scaling Groups	0	Dedicated Hosts	0
Elastic IPs	0	Instances	0	Key pairs	4
Load balancers	0	Placement groups	0	Security groups	3
Snapshots	0	Volumes	0		

Launch instance

To get started, launch an Amazon EC2 instance, which is a virtual server in the cloud.

Launch instance

Migrate a server

Note: Your instances will launch in the Asia Pacific (Mumbai) Region

Service health

Region: Asia Pacific (Mumbai)

Status: This service is operating normally.

EC2 Free Tier Info

Offers for all AWS Regions.

2 EC2 free tier offers in use

End of month forecast: 0 offers forecasted to exceed free tier limit.

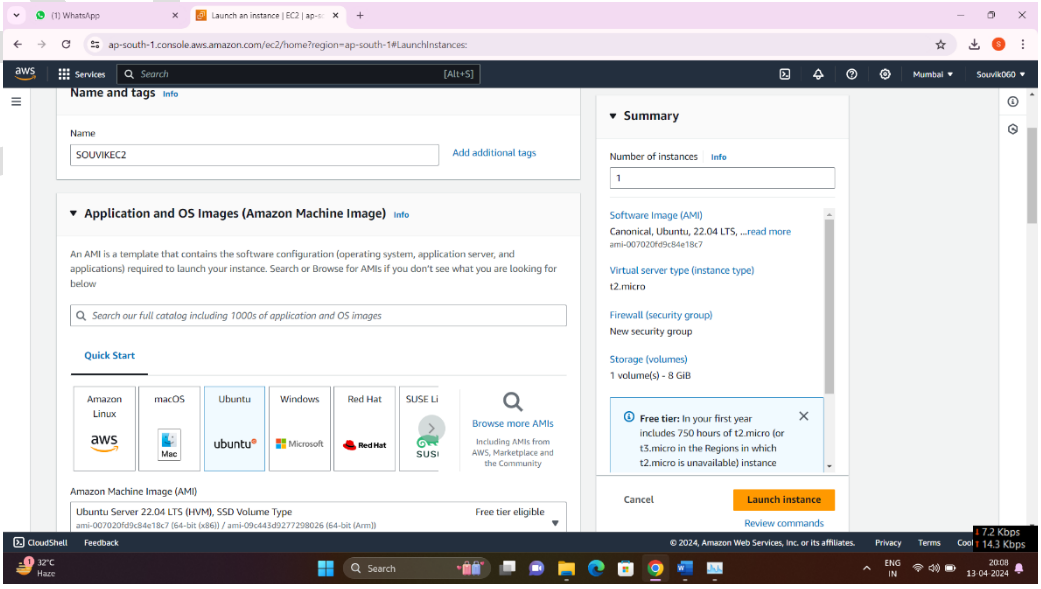
Exceeds free tier: 0 offers exceeded and is now pay-as-you-go pricing.

Offer usage (monthly)

Linux EC2 Instances 3% — 728.644167 hours remaining

Storage space on EBS 1% — 29.76 GB remaining

9. Fill up the instance name and select Ubuntu as the AMI.



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

Name and tags

Name: SOUVIKEC2

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, macOS, Ubuntu, Windows, Red Hat, SUSE Li

Amazon Machine Image (AMI)

Ubuntu Server 22.04 LTS (HVM), SSD Volume Type — Free tier eligible

ami-007020fd9c84e18c7 (64-bit (x86)) / ami-09c443d9277298026 (64-bit (Arm))

Summary

Number of instances: 1

Software Image (AMI): Canonical, Ubuntu, 22.04 LTS, ...read more
ami-007020fd9c84e18c7

Virtual server type (instance type): t2.micro

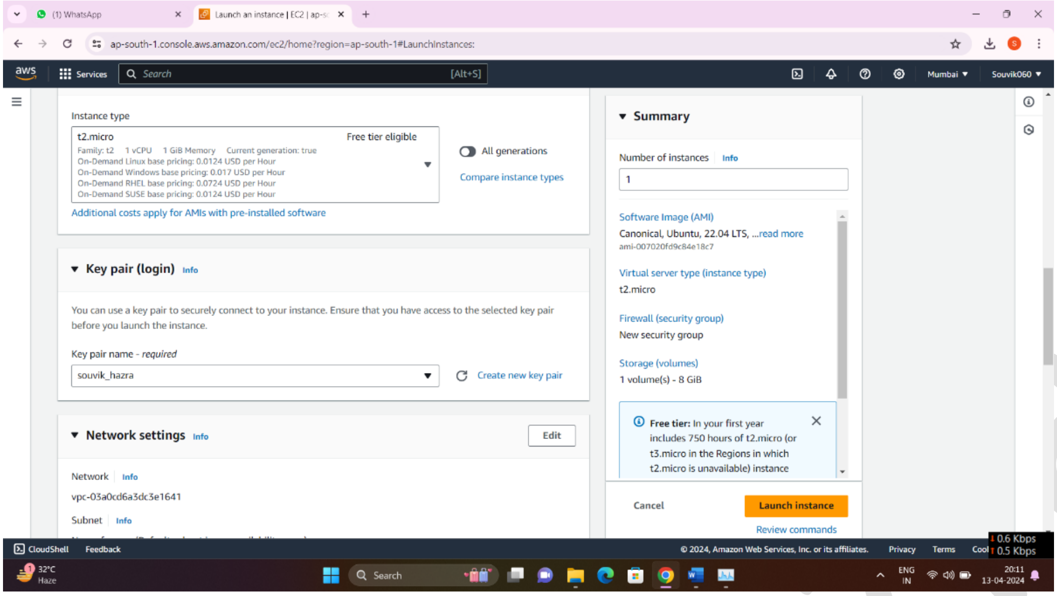
Firewall (security group): New security group

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

Cancel Launch instance

10. Select an existing keypair or create a new one.



Launch an instance | EC2 | ap-s
ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#LaunchInstances:
Services
Search
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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: 0.0724 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*: souvik_hazra

Create new key pair

Network settings Info — Edit

Network: vpc-03a0cd6a3dc3e1641

Subnet

Summary

Number of instances: 1

Software Image (AMI): Canonical, Ubuntu, 22.04 LTS, ...read more
ami-007020fd9c84e18c7

Virtual server type (instance type): t2.micro

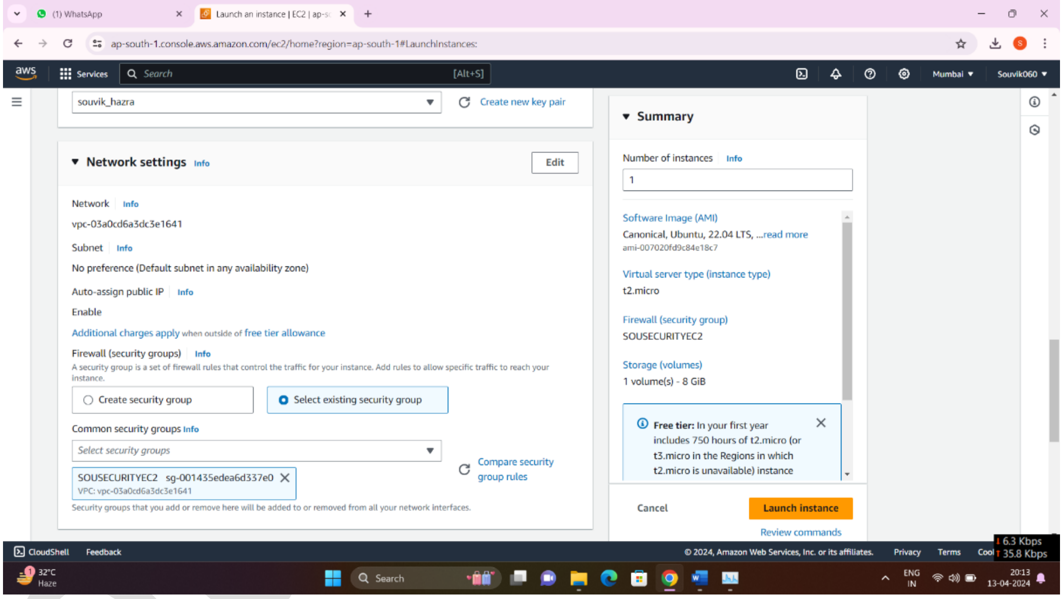
Firewall (security group): New security group

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

Cancel — Launch instance — Review commands

11. Now, from Network settings option select “Existing security group” and select the newly created security group.



Launch an instance | EC2 | ap-s
ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#LaunchInstances:
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Souvik060
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souvik_hazra — Create new key pair

Network settings Info — Edit

Network: vpc-03a0cd6a3dc3e1641

Subnet: No preference (Default subnet in any availability zone)

Auto-assign public IP: 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 allow specific traffic to reach your instance.

○ Create security group ● Select existing security group

Common security groups Info
Select security groups
SOUSECURITYEC2 sg-001435edea6d337e0
VPC: vpc-03a0cd6a3dc3e1641
Compare security group rules

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

Summary

Number of instances: 1

Software Image (AMI): Canonical, Ubuntu, 22.04 LTS, ...read more
ami-007020fd9c84e18c7

Virtual server type (instance type): t2.micro

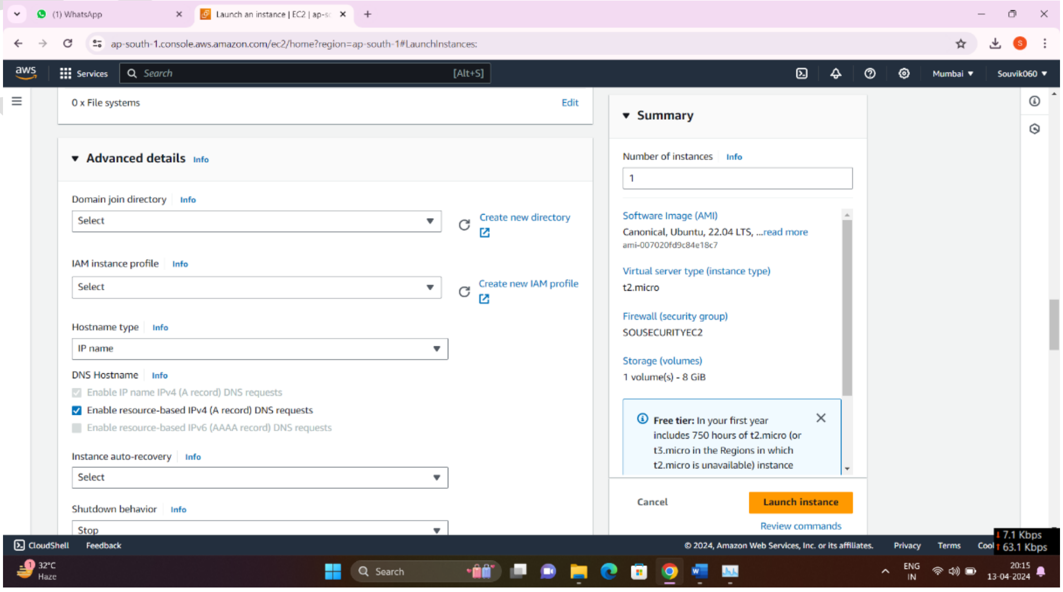
Firewall (security group): SOUSECURITYEC2

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

Cancel — Launch instance — Review commands

12. Expand the “Advanced details” section.



Launch an instance | EC2 | ap-s
ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#LaunchInstances:
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0 x File systems — Edit

Advanced details Info

Domain join directory: Select — Create new directory

IAM instance profile: Select — Create new IAM profile

Hostname type: IP name

DNS Hostname
☐ Enable IP name IPv4 (A record) DNS requests
☑ Enable resource-based IPv4 (A record) DNS requests
☐ Enable resource-based IPv6 (AAAA record) DNS requests

Instance auto-recovery: Select

Shutdown behavior: Stop

Summary

Number of instances: 1

Software Image (AMI): Canonical, Ubuntu, 22.04 LTS, ...read more
ami-007020fd9c84e18c7

Virtual server type (instance type): t2.micro

Firewall (security group): SOUSECURITYEC2

Storage (volumes): 1 volume(s) - 8 GiB

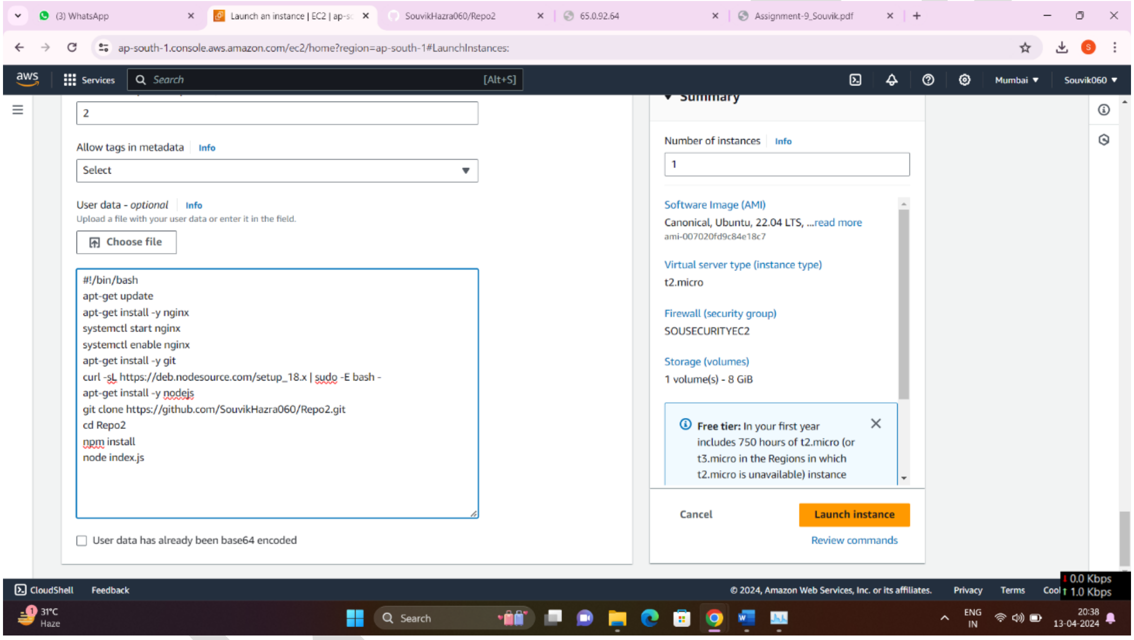
Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance

Cancel — Launch instance — Review commands

13. Scroll down to the "User data" section and add the following script:

```
#!/bin/bash
apt-get update
apt-get install -y nginx
systemctl start nginx
systemctl enable nginx
apt-get install -y git
curl -sL https://deb.nodesource.com/setup_18.x | sudo -E bash -
apt-get install -y nodejs
git clone <github repository cloning link>
cd Repo
npm install
node index.js
```

14. Then click on "Launch instance".



2

Allow tags in metadata Info

Select

User data - *optional* Info

Upload a file with your user data or enter it in the field.

Choose file

```
#!/bin/bash
apt-get update
apt-get install -y nginx
systemctl start nginx
systemctl enable nginx
apt-get install -y git
curl -sL https://deb.nodesource.com/setup_18.x | sudo -E bash -
apt-get install -y nodejs
git clone https://github.com/SouvikHazra060/Repo2.git
cd Repo2
npm install
node index.js
```

□ User data has already been base64 encoded

Summary

Number of instances Info

1

Software Image (AMI)
Canonical, Ubuntu, 22.04 LTS, ...read more
ami-007020fd9c84e18c7

Virtual server type (instance type)
t2.micro

Firewall (security group)
SOUSECURITYEC2

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

Cancel Launch instance Review commands

ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#LaunchInstances:
Services
Search
Mumbai
Souvik060
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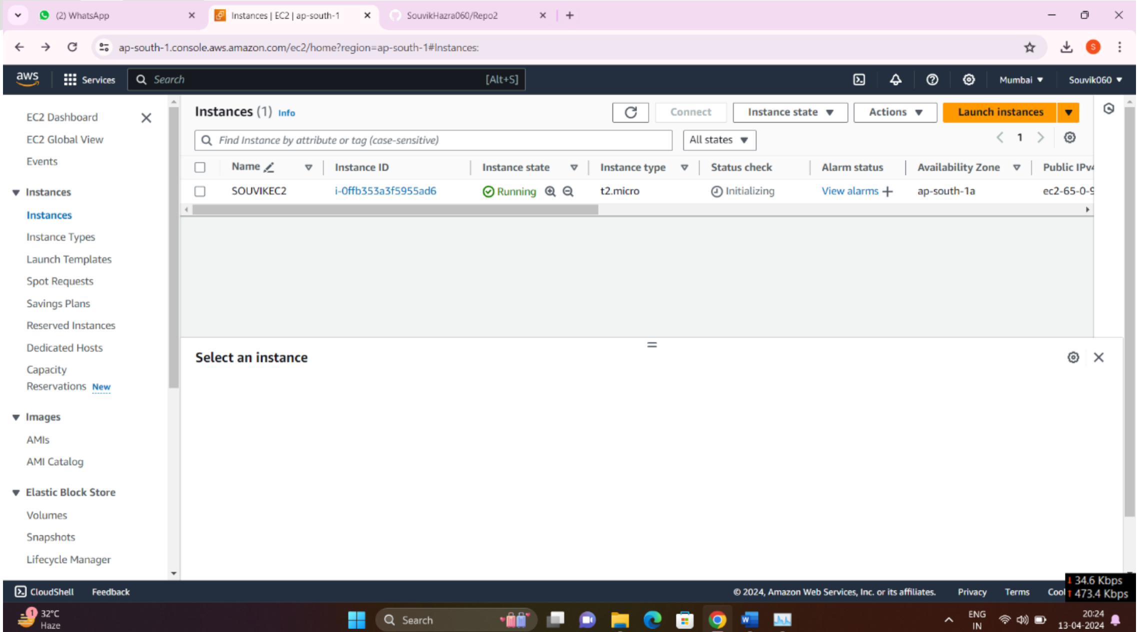
20:38
13-04-2024

15. Now go to "Instances" and click on the instance id of the newly created instance.

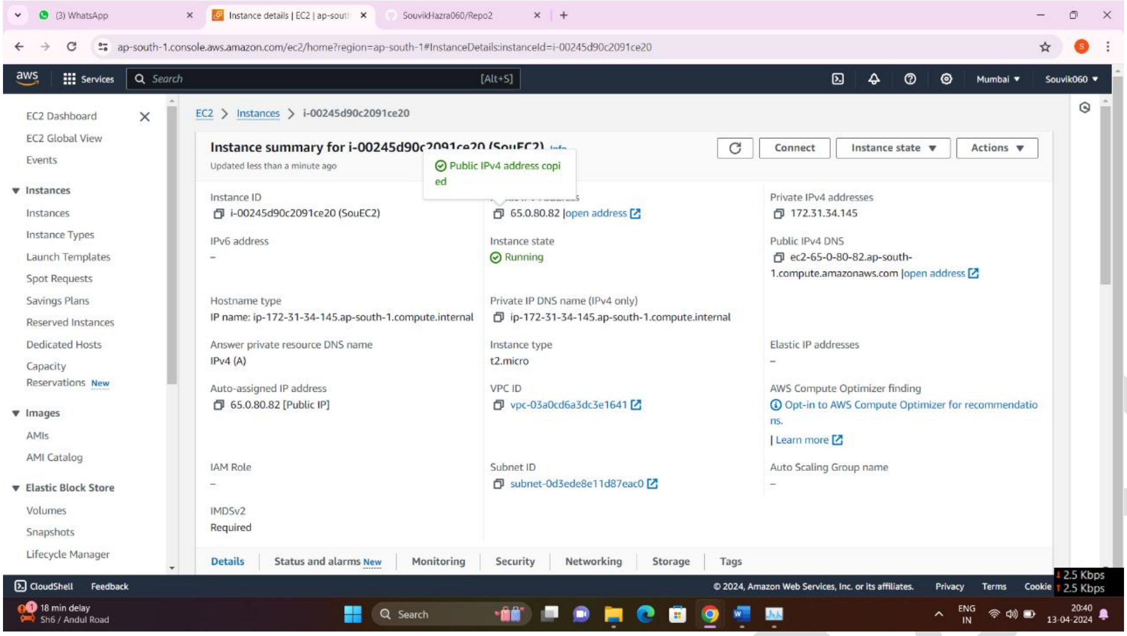


Instances (1) Info

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv
SOUVIKEC2	i-0ffb353a3f5955ad6	Running	t2.micro	Initializing	View alarms +	ap-south-1a	ec2-65-0-9

Select an instance

16. Copy the public IPv4 address.



Instance summary for i-00245d90c2091ce20 (SouEC2) Info

Updated less than a minute ago

Public IPv4 address copied

Instance ID
i-00245d90c2091ce20 (SouEC2)

Public IPv4 address
65.0.80.82 |open address

Private IPv4 addresses
172.31.34.145

IPv6 address
–

Instance state
Running

Public IPv4 DNS
ec2-65-0-80-82.ap-south-1.compute.amazonaws.com |open address

Hostname type
IP name: ip-172-31-34-145.ap-south-1.compute.internal

Private IP DNS name (IPv4 only)
ip-172-31-34-145.ap-south-1.compute.internal

Answer private resource DNS name
IPv4 (A)

Instance type
t2.micro

Elastic IP addresses
–

Auto-assigned IP address
65.0.80.82 [Public IP]

VPC ID
vpc-03a0cd6a3dc3e1641

AWS Compute Optimizer finding
Opt-in to AWS Compute Optimizer for recommendations.
| Learn more

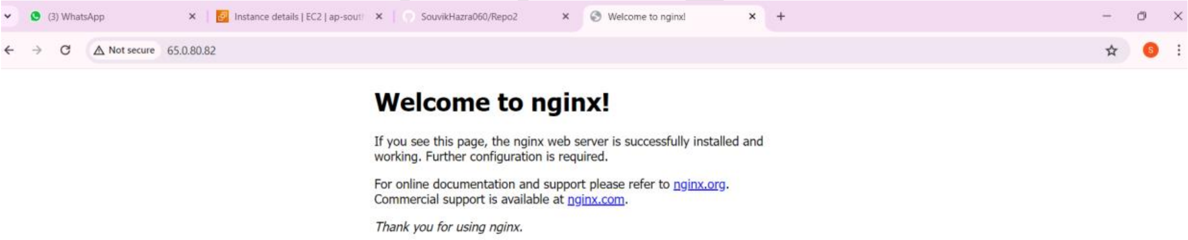
IAM Role
–

Subnet ID
subnet-0d3ede8e11d87eac0

Auto Scaling Group name
–

IMDSv2
Required

17. Open a new incognito tab and paste the IPv4 address copied then we can see the page "Welcome to nginx!" and add ":4000" to the end of public IPv4 address . This will display our intended website.

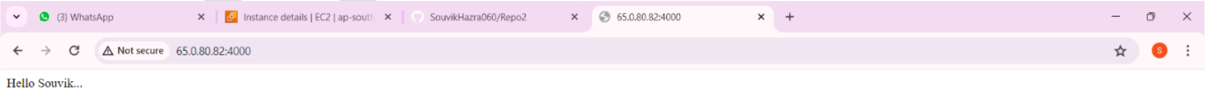


Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.



Hello Souvik...