AWS Cloud Infrastructure Deployment and Automation

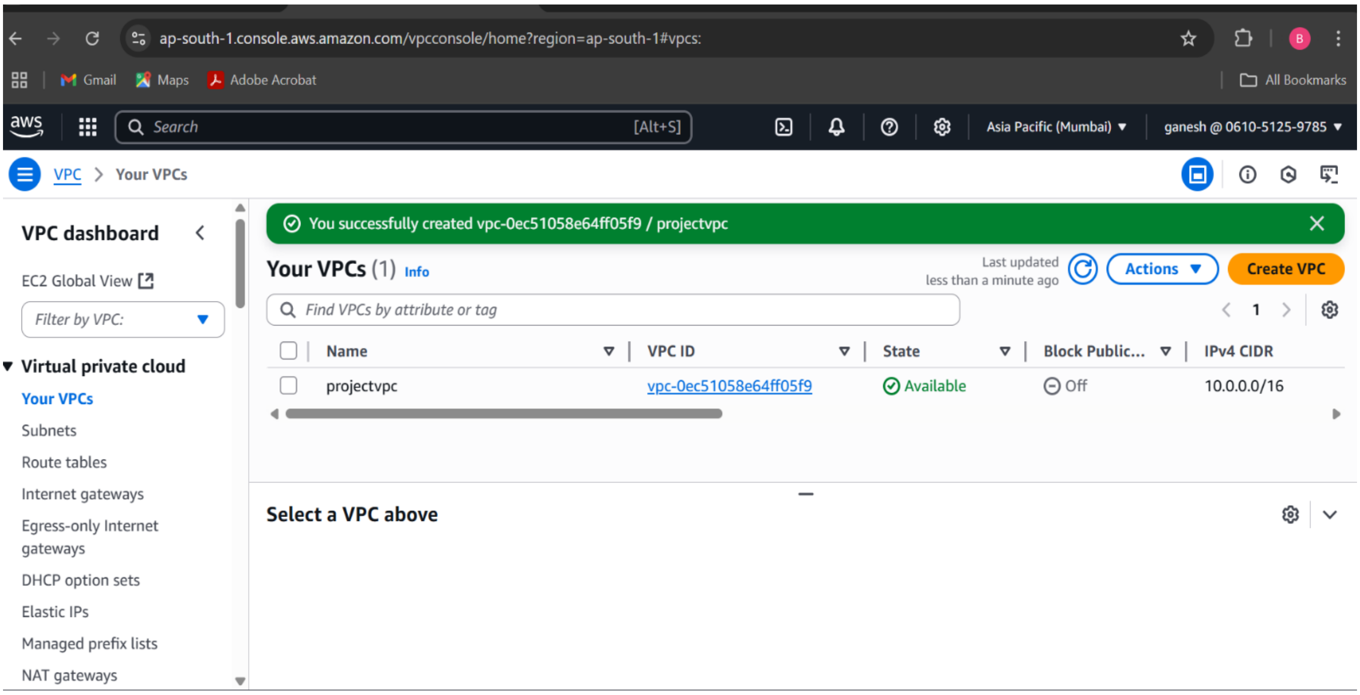
1. Create a VPC

What:
A Virtual Private Cloud (VPC) is a logically isolated section of AWS where you launch AWS resources.

How:

- In AWS Console, go to **VPC**, click **Create VPC**.
- Choose default or custom settings (CIDR block, subnets, etc).

Why:
This isolates your application's network for security and control.



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

You successfully created vpc-0ec51058e64ff05f9 / projectvpc

Your VPCs (1)

Name	VPC ID	State	Block Public...	IPv4 CIDR
projectvpc	vpc-0ec51058e64ff05f9	Available	Off	10.0.0.0/16

Select a VPC above

2. Create S3 and Upload File

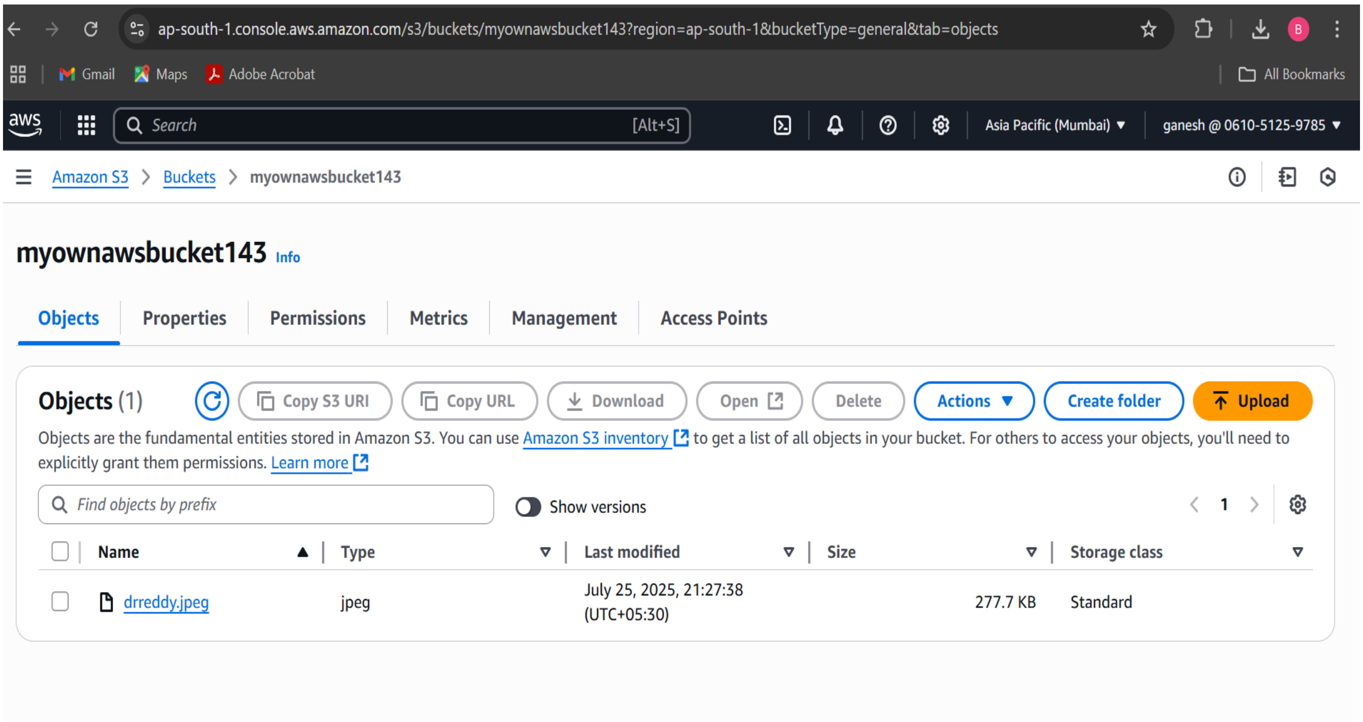
What:
S3 is Amazon's object storage.

How:

- In AWS Console, go to **S3**, **Create Bucket**.
- Upload files (e.g., static assets or media for your app).

Why:
S3 is used for storing files, static data, backups, etc.

AWS Cloud Infrastructure Deployment and Automation



myownawsbucket143

Objects (1)

Objects are the fundamental entities stored in Amazon S3. You can use Amazon S3 inventory to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. Learn more

□	Name	Type	Last modified	Size	Storage class
□	drreddy.jpeg	jpeg	July 25, 2025, 21:27:38 (UTC+05:30)	277.7 KB	Standard

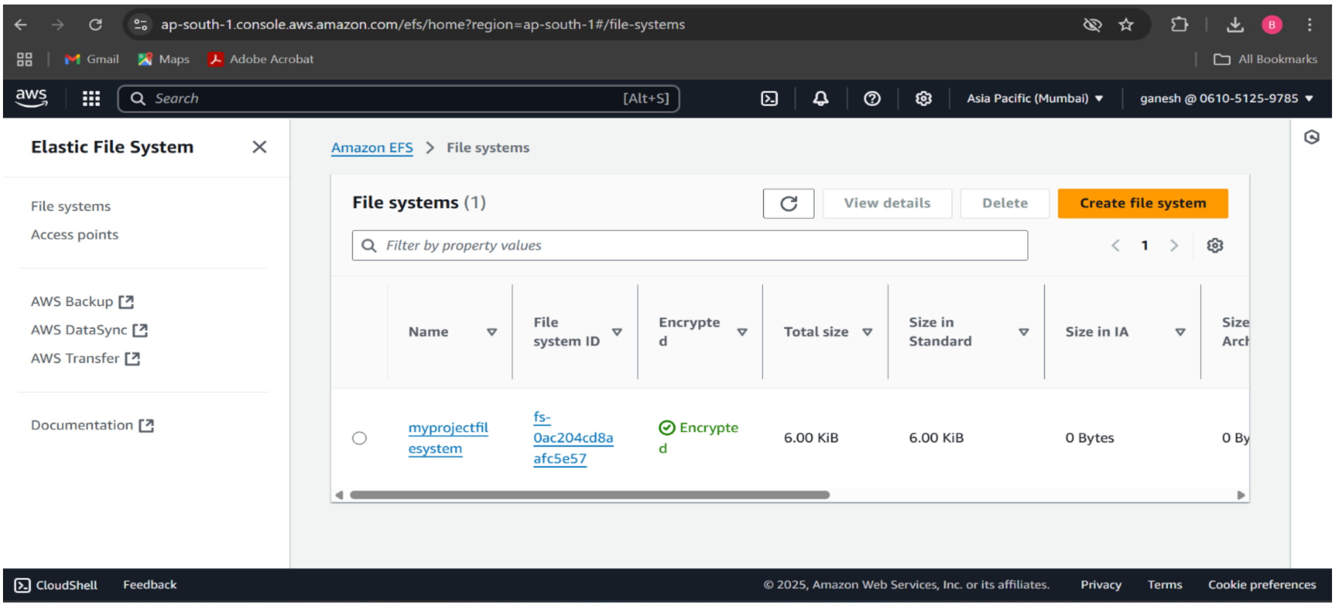
3. Create EFS

What:
EFS (Elastic File System) is scalable file storage for use with EC2.

How:

- Go to EFS, **Create file system**.
- Set up mount targets, security groups.

Why:
EFS can be mounted on multiple EC2s at once, useful for sharing files or app data.



File systems (1)

	Name	File system ID	Encrypted	Total size	Size in Standard	Size in IA	Size Arch
○	myprojectfilesystem	fs-0ac204cd8aafc5e57	Encrypted	6.00 KiB	6.00 KiB	0 Bytes	0 By

4. Launch EC2, Install Nginx, Configure index.html

What:
EC2 are the virtual servers. Nginx is a web server.

How:

- Launch an EC2 instance (Amazon Linux/Ubuntu).
- SSH into instance.
- Install nginx:

```
#bash

sudo apt update

sudo apt upgrade

sudo apt install nginx

sudo systemctl status nginx
```

- Create and edit /var/www/html/index.html.

Why:
This is your web server that will host your app site.

5. Login to Your Ubuntu Instance

What:
SSH into your EC2 machine to perform administrative tasks.

How:

```
bash

ssh -i your-key.pem ubuntu@<public-ip>
```

Use your PEM key and the public IP from the AWS console.

6. Update & Upgrade OS (on EC2)

What:
Keeps your system secure and up to date.

How:

```
bash

sudo apt update

sudo apt upgrade
```

AWS Cloud Infrastructure Deployment and Automation

7. Install and Check Nginx

How:

#bash

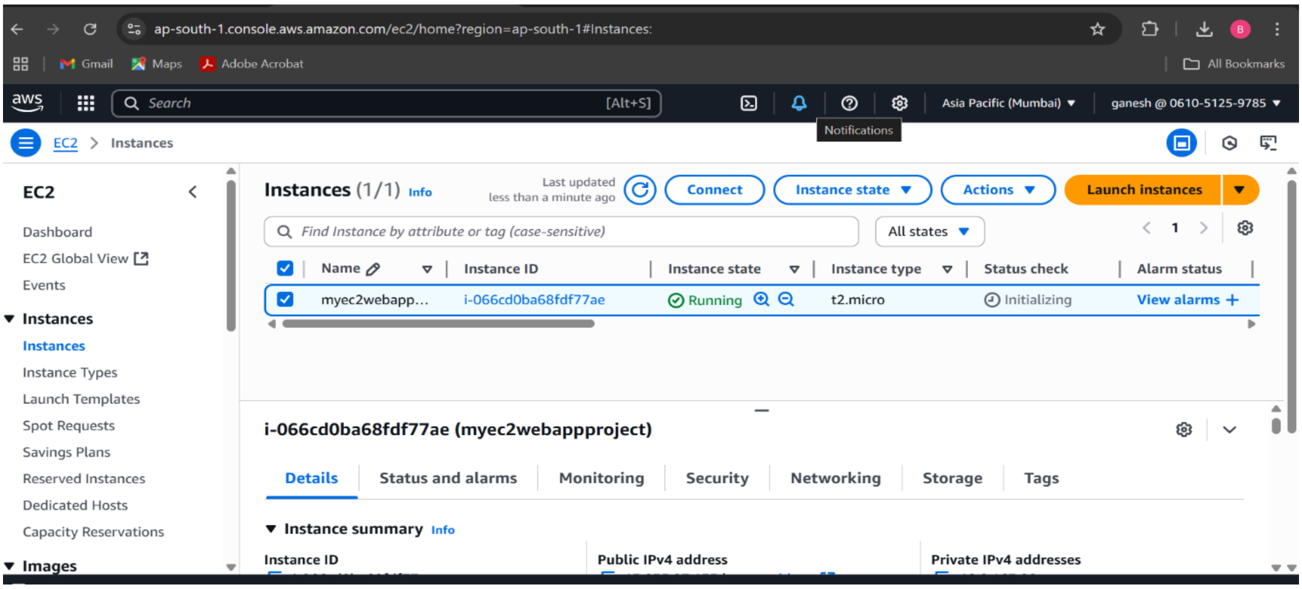
sudo apt install nginx

sudo systemctl status nginx

This installs and checks if nginx is running.

sudo unlink /etc/nginx/sites-enabled/default

sudo apt update



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

Instances (1/1)

Last updated less than a minute ago

Name	Instance ID	Instance state	Instance type	Status check	Alarm status
myec2webapp…	i-066cd0ba68fdf77ae	Running	t2.micro	Initializing	View alarms +

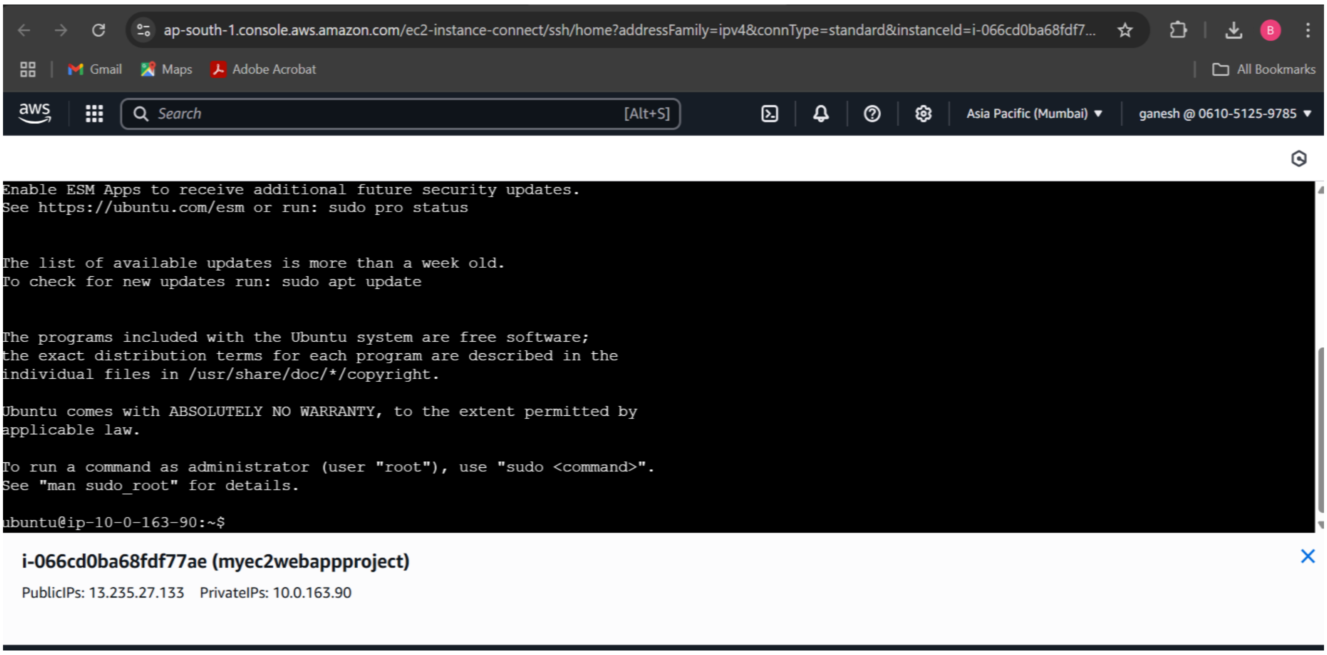
i-066cd0ba68fdf77ae (myec2webappproject)

Instance summary

Instance ID

Public IPv4 address

Private IPv4 addresses



ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh/home?addressFamily=ipv4&connType=standard&instanceId=i-066cd0ba68fdf7...

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


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-10-0-163-90:~$
```

i-066cd0ba68fdf77ae (myec2webappproject)

PublicIPs: 13.235.27.133 PrivateIPs: 10.0.163.90

sudo systemctl status nginx

AWS Cloud Infrastructure Deployment and Automation

sudo mkdir -p /var/www/ganeshreddy.shop/html

sudo ln -s /etc/nginx/sites-available/ganeshreddy.shop /etc/nginx/sites-enabled/

8. Continue Nginx Setup (via Blog)

Follow the instructions from the linked Linode blog (from the "Use NGINX #" step onwards) for further nginx configuration.

9. Mount EFS to EC2

How:

1. **Install NFS client:**

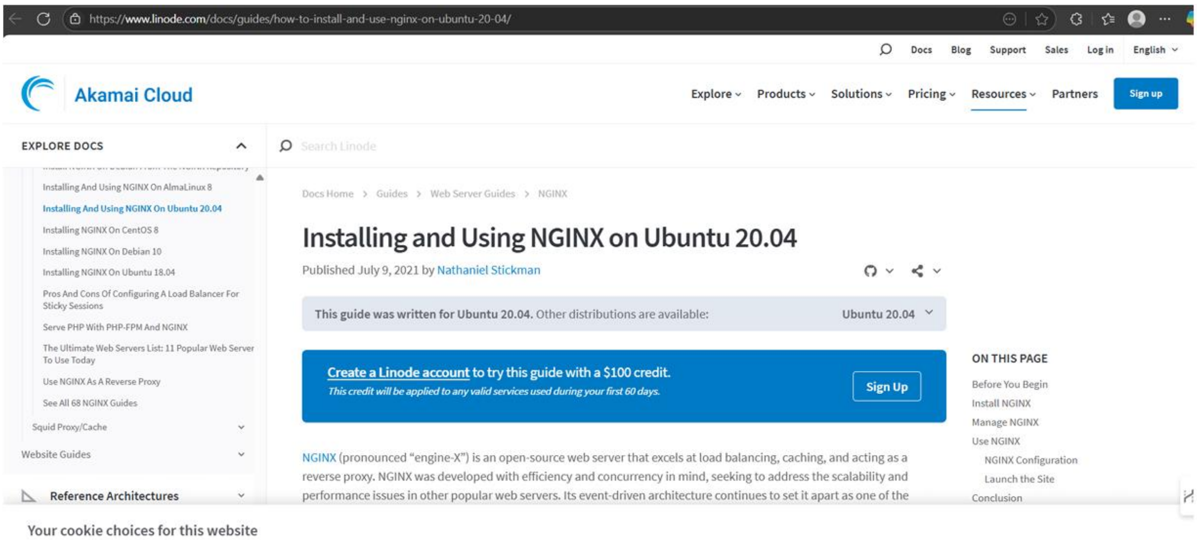
bash

sudo apt-get -y install nfs-common

2. **Mount EFS volume** (replace fs-xxxx with your EFS file system id):

bash

3. Create or move your index.html as needed.


https://www.linode.com/docs/guides/how-to-install-and-use-nginx-on-ubuntu-20-04/
Docs
Blog
Support
Sales
Log in
English
Akamai Cloud
Explore
Products
Solutions
Pricing
Resources
Partners
Sign up
EXPLORE DOCS
Search Linode
Installing And Using NGINX On AlmaLinux 8
Installing And Using NGINX On Ubuntu 20.04
Installing NGINX On CentOS 8
Installing NGINX On Debian 10
Installing NGINX On Ubuntu 18.04
Pros And Cons Of Configuring A Load Balancer For Sticky Sessions
Serve PHP With PHP-FPM And NGINX
The Ultimate Web Servers List: 11 Popular Web Server To Use Today
Use NGINX As A Reverse Proxy
See All 68 NGINX Guides
Squid Proxy/Cache
Website Guides
Reference Architectures
Docs Home > Guides > Web Server Guides > NGINX
ON THIS PAGE
Before You Begin
Install NGINX
Manage NGINX
Use NGINX
NGINX Configuration
Launch the Site
Conclusion

Installing and Using NGINX on Ubuntu 20.04

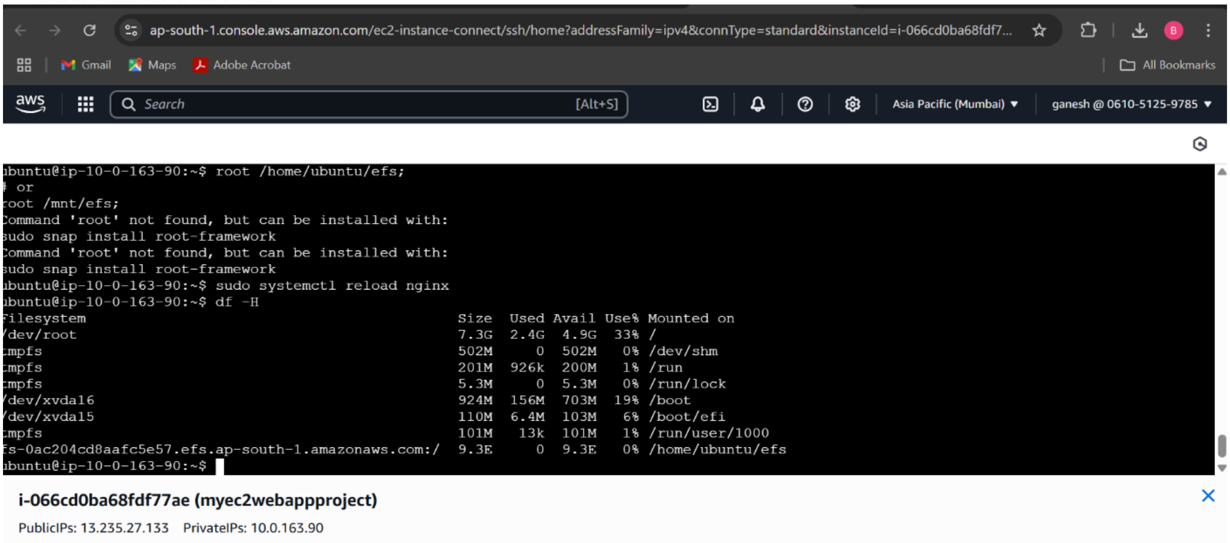
Published July 9, 2021 by Nathaniel Stickman

This guide was written for Ubuntu 20.04. Other distributions are available: Ubuntu 20.04

Create a Linode account to try this guide with a $100 credit.
This credit will be applied to any valid services used during your first 60 days. Sign Up

NGINX (pronounced "engine-X") is an open-source web server that excels at load balancing, caching, and acting as a reverse proxy. NGINX was developed with efficiency and concurrency in mind, seeking to address the scalability and performance issues in other popular web servers. Its event-driven architecture continues to set it apart as one of the

Your cookie choices for this website

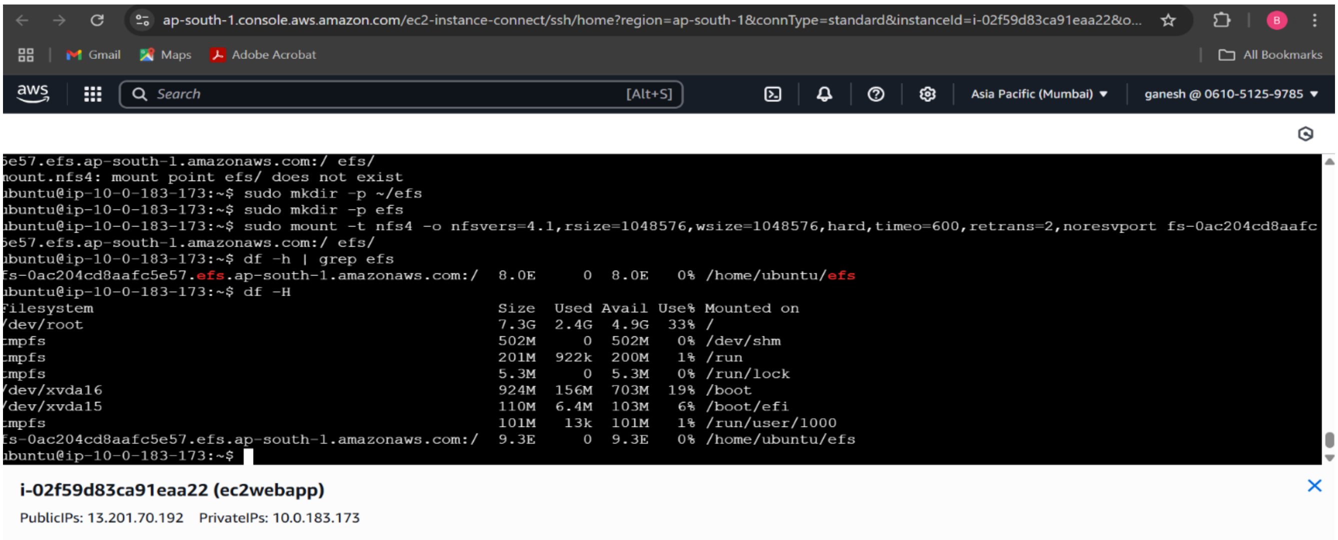

ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh/home?addressFamily=ipv4&connType=standard&instanceId=i-066cd0ba68fdf7...
Gmail
Maps
Adobe Acrobat
All Bookmarks
aws
Search
[Alt+S]
Asia Pacific (Mumbai)
ganesh @ 0610-5125-9785

```
ubuntu@ip-10-0-163-90:~$ root /home/ubuntu/efs;
# or
root /mnt/efs;
Command 'root' not found, but can be installed with:
sudo snap install root-framework
Command 'root' not found, but can be installed with:
sudo snap install root-framework
ubuntu@ip-10-0-163-90:~$ sudo systemctl reload nginx
ubuntu@ip-10-0-163-90:~$ df -H
Filesystem                                        Size  Used Avail Use% Mounted on
/dev/root                                         7.3G  2.4G  4.9G  33% /
tmpfs                                             502M     0  502M   0% /dev/shm
tmpfs                                             201M  926k  200M   1% /run
tmpfs                                             5.3M     0  5.3M   0% /run/lock
/dev/xvda16                                       924M  156M  703M  19% /boot
/dev/xvda15                                       110M  6.4M  103M   6% /boot/efi
tmpfs                                             101M   13k  101M   1% /run/user/1000
fs-0ac204cd8aafc5e57.efs.ap-south-1.amazonaws.com:/  9.3E     0  9.3E   0% /home/ubuntu/efs
ubuntu@ip-10-0-163-90:~$
```

i-066cd0ba68fdf77ae (myec2webappproject)

PublicIPs: 13.235.27.133 PrivateIPs: 10.0.163.90

AWS Cloud Infrastructure Deployment and Automation


ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh/home?region=ap-south-1&connType=standard&instanceId=i-02f59d83ca91eaa22&o...
Gmail
Maps
Adobe Acrobat
All Bookmarks
aws
Search
[Alt+S]
Asia Pacific (Mumbai)
ganesh @ 0610-5125-9785

```
5e57.efs.ap-south-1.amazonaws.com:/ efs/
mount.nfs4: mount point efs/ does not exist
ubuntu@ip-10-0-183-173:~$ sudo mkdir -p ~/efs
ubuntu@ip-10-0-183-173:~$ sudo mkdir -p efs
ubuntu@ip-10-0-183-173:~$ sudo mount -t nfs4 -o nfsvers=4.1,rsize=1048576,wsize=1048576,hard,timeo=600,retrans=2,noresvport fs-0ac204cd8aafc
5e57.efs.ap-south-1.amazonaws.com:/ efs/
ubuntu@ip-10-0-183-173:~$ df -h | grep efs
fs-0ac204cd8aafc5e57.efs.ap-south-1.amazonaws.com:/  8.0E     0  8.0E   0% /home/ubuntu/efs
ubuntu@ip-10-0-183-173:~$ df -H
Filesystem                                           Size  Used Avail Use% Mounted on
/dev/root                                            7.3G  2.4G  4.9G  33% /
tmpfs                                                502M     0  502M   0% /dev/shm
tmpfs                                                201M  922k  200M   1% /run
tmpfs                                                5.3M     0  5.3M   0% /run/lock
/dev/xvda16                                          924M  156M  703M  19% /boot
/dev/xvda15                                          110M  6.4M  103M   6% /boot/efi
tmpfs                                                101M   13k  101M   1% /run/user/1000
fs-0ac204cd8aafc5e57.efs.ap-south-1.amazonaws.com:/  9.3E     0  9.3E   0% /home/ubuntu/efs
ubuntu@ip-10-0-183-173:~$
```

i-02f59d83ca91eaa22 (ec2webapp)

PublicIPs: 13.201.70.192 PrivateIPs: 10.0.183.173

10. Create RDS Database

What:
RDS is AWS's managed relational database.

How:

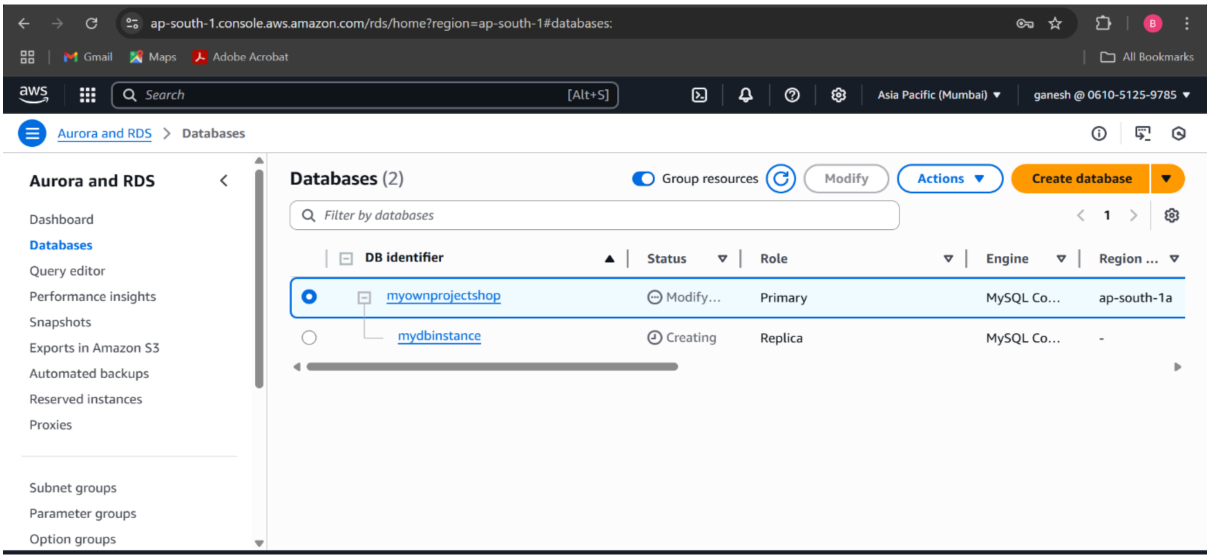
- Go to **RDS** > **Create database**
- Choose DB engine (MySQL, Postgres, etc.)
- Set username, password, instance type.
- Create data base

11. Create a Read Replica (Optional)

What/Why:
Improves scalability by offloading reads from the primary database.

How:

- In your RDS instance, select **Create read replica**.



Databases (2)

	DB identifier	Status	Role	Engine	Region ...
●	myownprojectshop	Modify...	Primary	MySQL Co...	ap-south-1a
○	mydbinstance	Creating	Replica	MySQL Co...	-

AWS Cloud Infrastructure Deployment and Automation

12. Connect EC2 to RDS

How:

1. Install MySQL client:

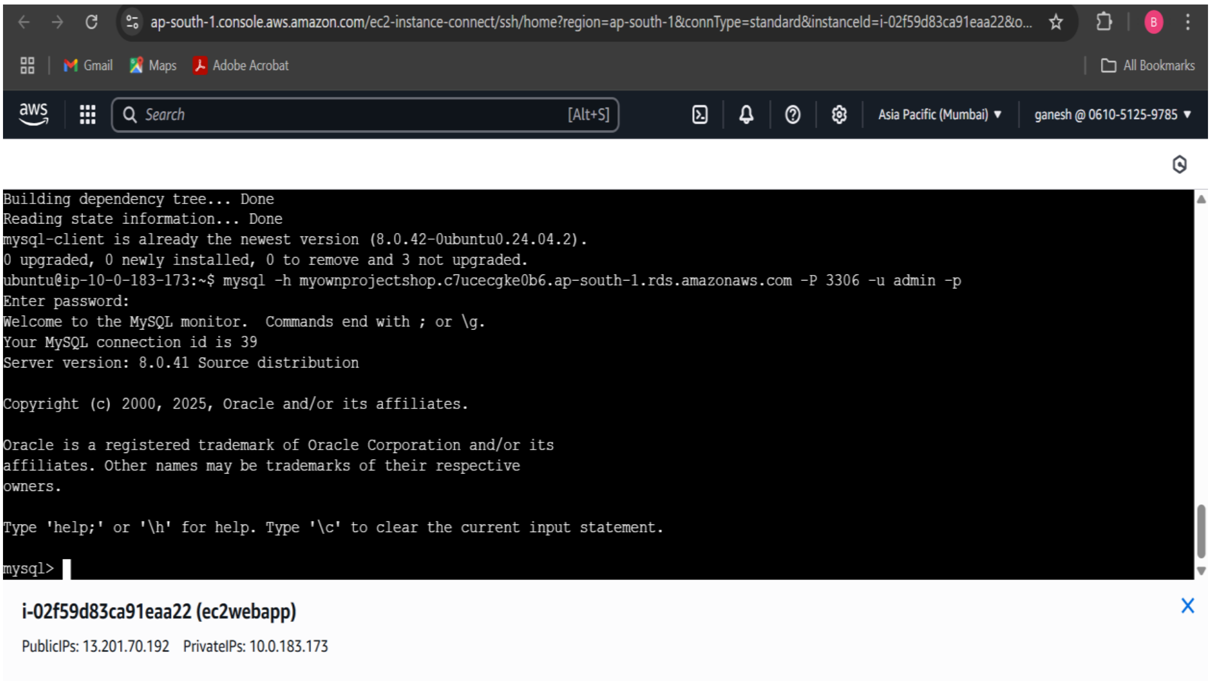
   bash

   sudo apt-get install mysql-client

2. Connect to the DB:

   bash

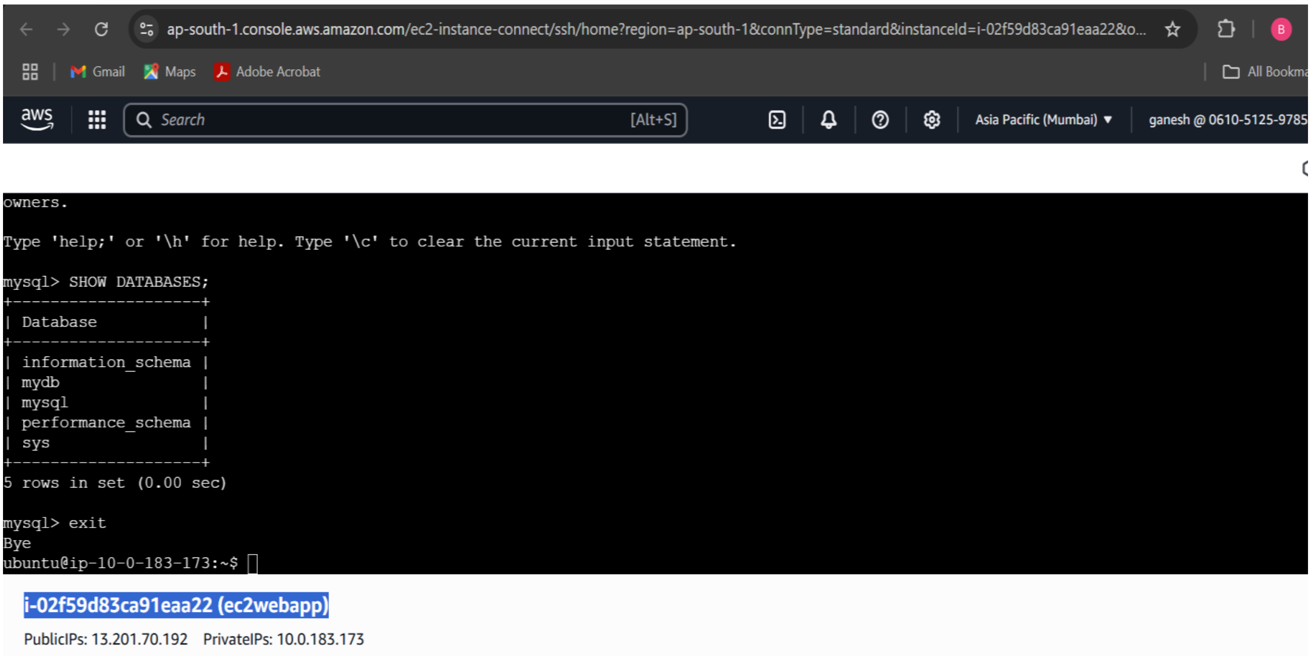
   mysql -h myownprojectshop.c7ucecgke0b6.ap-south-1.rds.amazonaws.com -P 3306 -u admin -p


ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh/home?region=ap-south-1&connType=standard&instanceId=i-02f59d83ca91eaa22&o...
Gmail
Maps
Adobe Acrobat
All Bookmarks
aws
Search
[Alt+S]
Asia Pacific (Mumbai) ▼
ganesh @ 0610-5125-9785 ▼

```
Building dependency tree... Done
Reading state information... Done
mysql-client is already the newest version (8.0.42-0ubuntu0.24.04.2).
0 upgraded, 0 newly installed, 0 to remove and 3 not upgraded.
ubuntu@ip-10-0-183-173:~$ mysql -h myownprojectshop.c7ucecgke0b6.ap-south-1.rds.amazonaws.com -P 3306 -u admin -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 39
Server version: 8.0.41 Source distribution

Copyright (c) 2000, 2025, Oracle and/or its affiliates.

Oracle is a registered trademark of Oracle Corporation and/or its
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> 
```

i-02f59d83ca91eaa22 (ec2webapp)

PublicIPs: 13.201.70.192 PrivateIPs: 10.0.183.173


ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh/home?region=ap-south-1&connType=standard&instanceId=i-02f59d83ca91eaa22&o...
Gmail
Maps
Adobe Acrobat
All Bookma
aws
Search
[Alt+S]
Asia Pacific (Mumbai) ▼
ganesh @ 0610-5125-9785

```
owners.

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

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

mysql> exit
Bye
ubuntu@ip-10-0-183-173:~$ 
```

i-02f59d83ca91eaa22 (ec2webapp)

PublicIPs: 13.201.70.192 PrivateIPs: 10.0.183.173

AWS Cloud Infrastructure Deployment and Automation

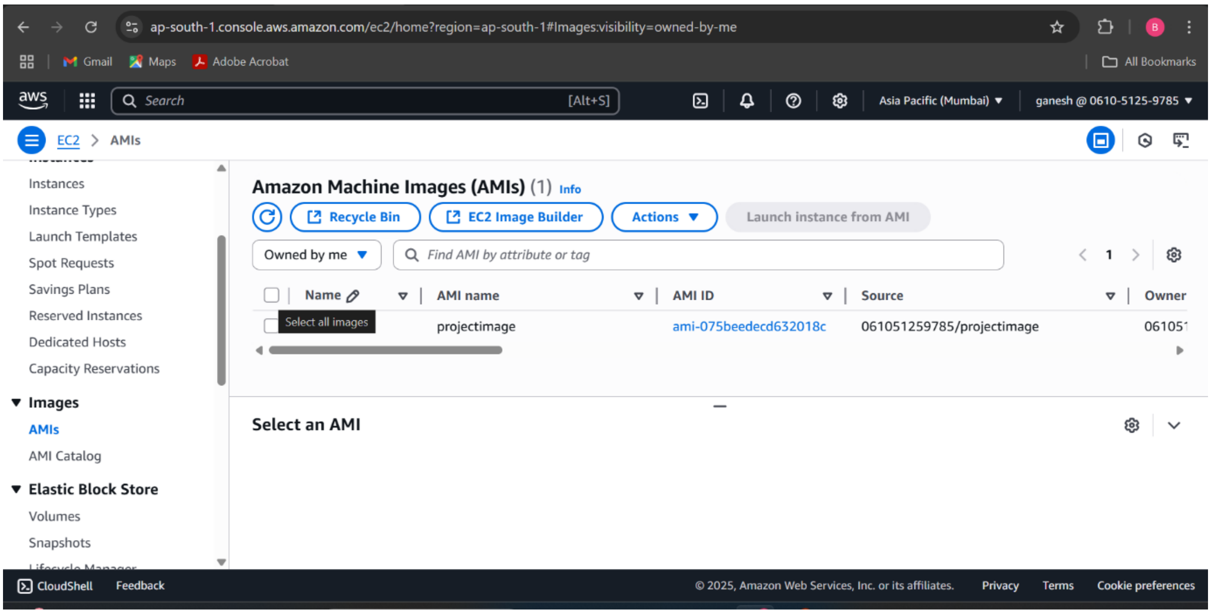
13. Create AMI

What:
AMI (Amazon Machine Image): A snapshot/template of your EC2 instance.

Why:
Allows quick scaling or disaster recovery.

How:

- Select EC2 instance, -> Actions -> Image and Templates -> Create Image.



ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#Images:visibility=owned-by-me

Amazon Machine Images (AMIs) (1)

Owned by me

Find AMI by attribute or tag

Name	AMI name	AMI ID	Source	Owner
	projectimage	ami-075beedecd632018c	061051259785/projectimage	06105

Select an AMI

14. Configure ALB (Application Load Balancer) and ASG (Auto Scaling Group)

What:

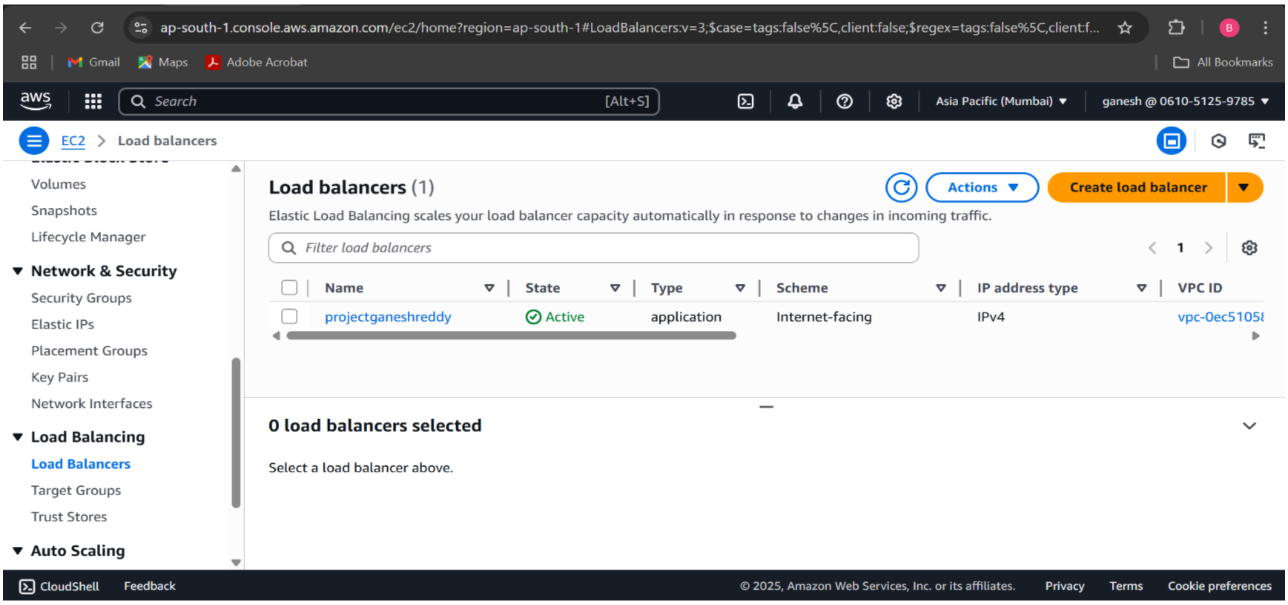
- **ALB:** Distributes incoming traffic to multiple EC2 instances.
- **ASG:** Automatically adjusts the number of EC2 instances based on demand.

How:

1. **Create ALB:**
   - Go to **EC2 > Load Balancers**.
   - Click **Create Load Balancer** > **Application Load Balancer**.
   - Set up listeners (usually HTTP & HTTPS), choose subnets, and security groups.
   - Register your EC2 instances (or the target group that will auto-register them via ASG).
2. **Create Launch Template/Configuration:**
   - Go to **EC2 > Launch Templates** and click **Create launch template**.
   - Reference your previously created AMI.

3. **Create Auto Scaling Group:**

- In **EC2 > Auto Scaling Groups**, click **Create Auto Scaling group**.
- Pick your launch template (from the previous step).
- Select VPC, subnets, and attach your Target Group (from the ALB).
- Define min, max, and desired number of EC2 instances.
- Set scaling policies (optional, for automatic scaling based on CPU/memory, etc.).



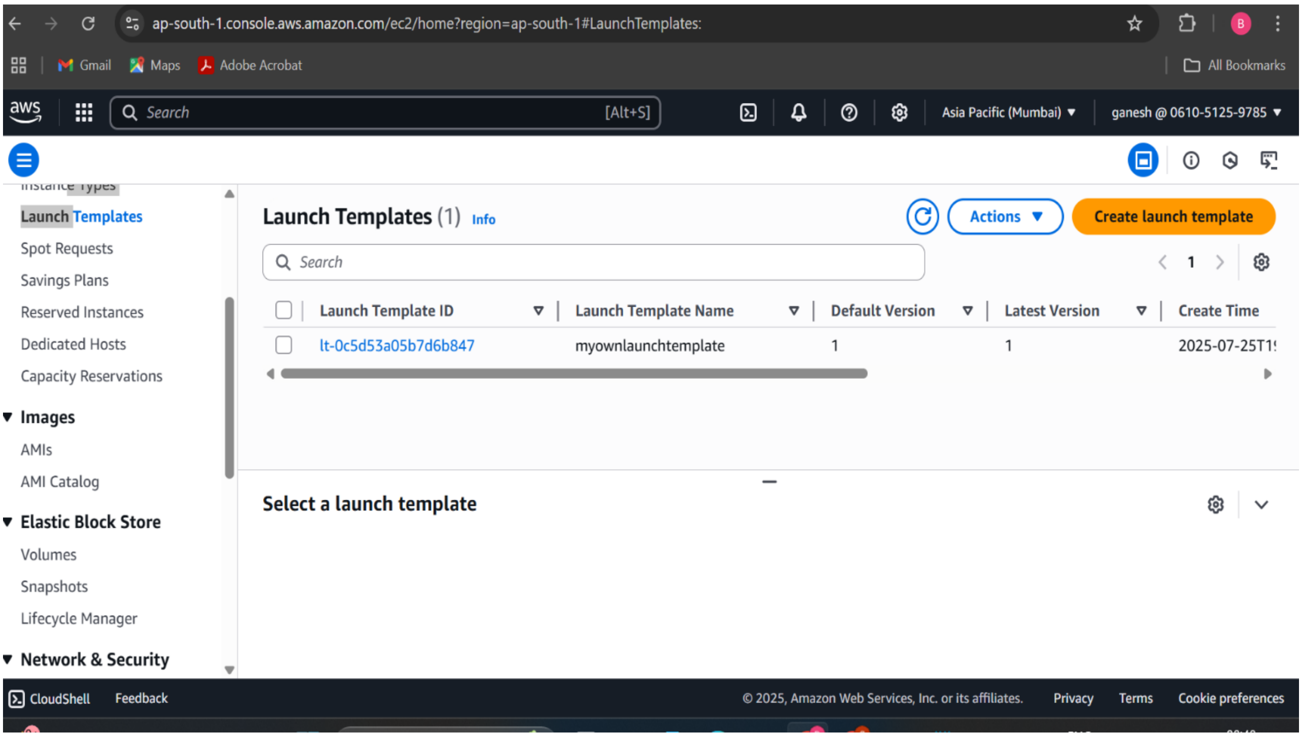
Load balancers (1)

Elastic Load Balancing scales your load balancer capacity automatically in response to changes in incoming traffic.

□	Name	State	Type	Scheme	IP address type	VPC ID
□	projectganeshreddy	✓ Active	application	Internet-facing	IPv4	vpc-0ec5105

0 load balancers selected

Select a load balancer above.

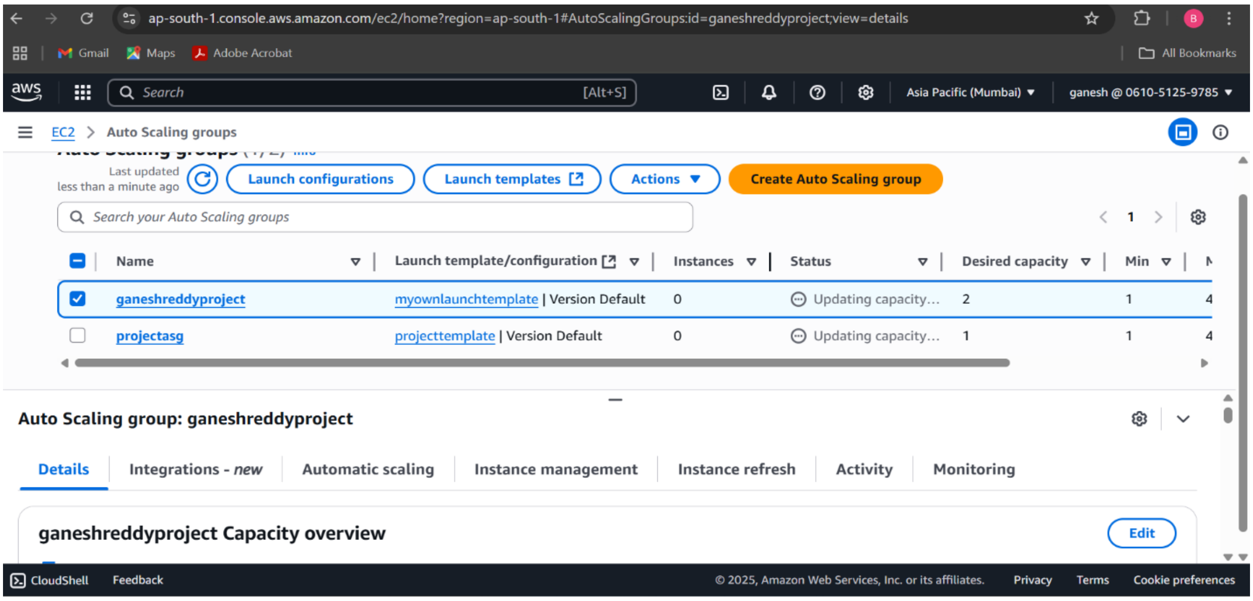


Launch Templates (1)

□	Launch Template ID	Launch Template Name	Default Version	Latest Version	Create Time
□	lt-0c5d53a05b7d6b847	myownlaunchtemplate	1	1	2025-07-25T1

Select a launch template

AWS Cloud Infrastructure Deployment and Automation


ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#AutoScalingGroups:id=ganeshreddyproject;view=details
Gmail
Maps
Adobe Acrobat
All Bookmarks
aws
Search
[Alt+S]
Asia Pacific (Mumbai) ▼
ganesh @ 0610-5125-9785 ▼
EC2 > Auto Scaling groups
Last updated less than a minute ago
Launch configurations
Launch templates
Actions ▼
Create Auto Scaling group
Search your Auto Scaling groups
1
Details
Integrations - new
Automatic scaling
Instance management
Instance refresh
Activity
Monitoring
Edit
CloudShell
Feedback
© 2025, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences

☑	Name	Launch template/configuration	Instances	Status	Desired capacity	Min	M
☑	ganeshreddyproject	myownlaunchtemplate | Version Default	0	Updating capacity…	2	1	4
□	projectasg	projecttemplate | Version Default	0	Updating capacity…	1	1	4

Auto Scaling group: ganeshreddyproject

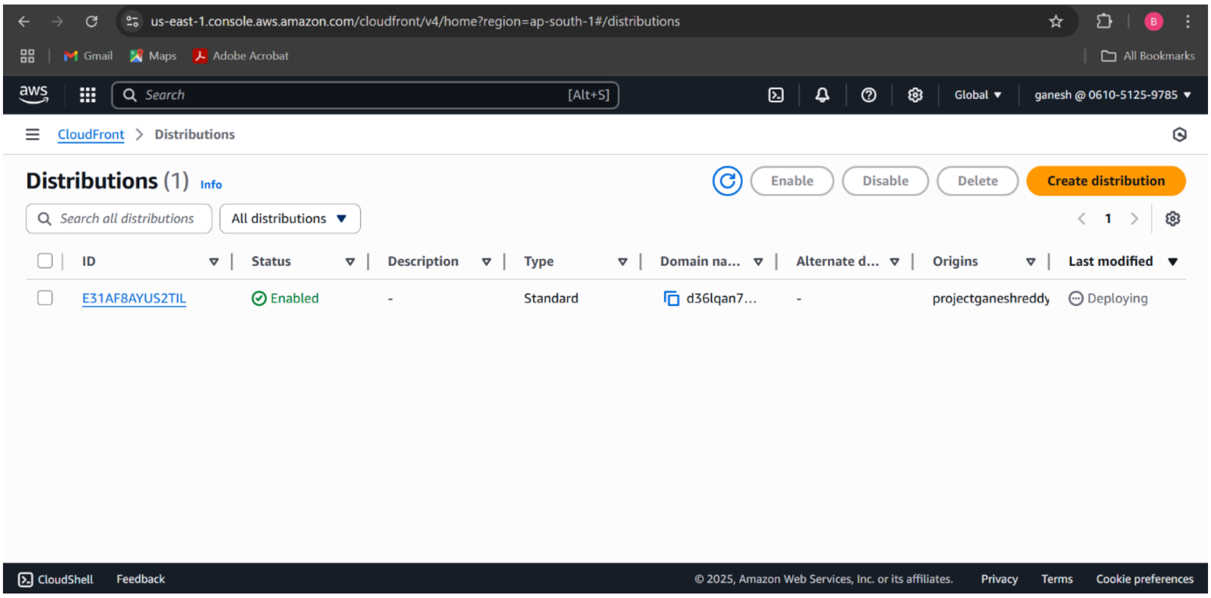
ganeshreddyproject Capacity overview

15. Create and Configure CloudFront with ALB

What:
CloudFront is AWS's global Content Delivery Network (CDN); it caches and distributes content closer to users worldwide.

How:

1. Go to **CloudFront > Distributions > Create Distribution**.
2. For origin, enter your ALB's DNS name (found in EC2 > Load Balancers).
3. Configure whether to use HTTP or HTTPS (set up certificates as needed).
4. Customize cache behavior, price class, and any desired settings.
5. Click **Create Distribution**.
   CloudFront assigns a Distribution Domain Name (e.g., d1xyz.cloudfront.net).



□	ID	Status	Description	Type	Domain na...	Alternate d...	Origins	Last modified
□	E31AF8AYUS2TIL	Enabled	-	Standard	d36lqan7…	-	projectganeshreddy	Deploying

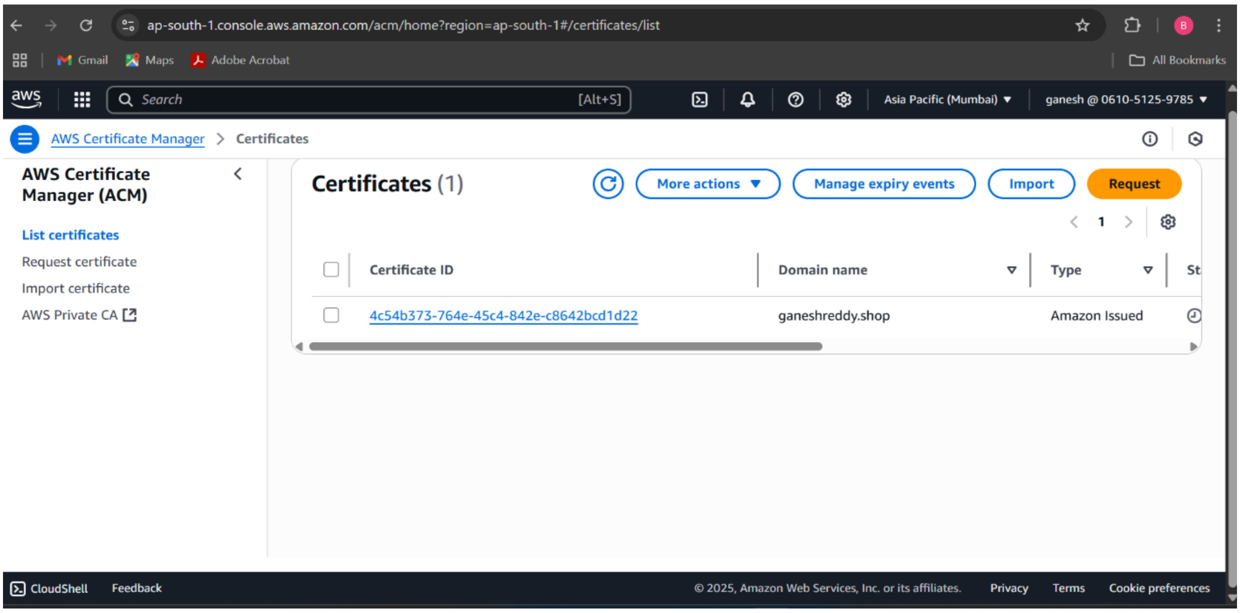
16. Create CNAME, Update Route 53 Records from ACM

What:

- **ACM (AWS Certificate Manager):** Issues SSL/TLS certificates for HTTPS.
- **Route 53:** AWS DNS service.

How:

1. In **ACM** (Certificate Manager), request a new certificate for your domain.
2. ACM will provide a CNAME record for DNS validation.
3. Go to **Route 53 > Hosted zones**, and for your domain, **create a new CNAME record** with the name and value provided by ACM (for validation).
4. Wait for certificate validation (ACM status will update to "Issued").
5. Later, **in Route 53**, add/modify DNS records to point your domain/subdomain to your ALB or CloudFront:
    - **A/AAAA Alias** record for root/apex domains.
    - **CNAME** for subdomains.



Certificates (1)

	Certificate ID	Domain name	Type	St
□	4c54b373-764e-45c4-842e-c8642bcd1d22	ganeshreddy.shop	Amazon Issued	

17. Buy Domain, Use Route 53

How:

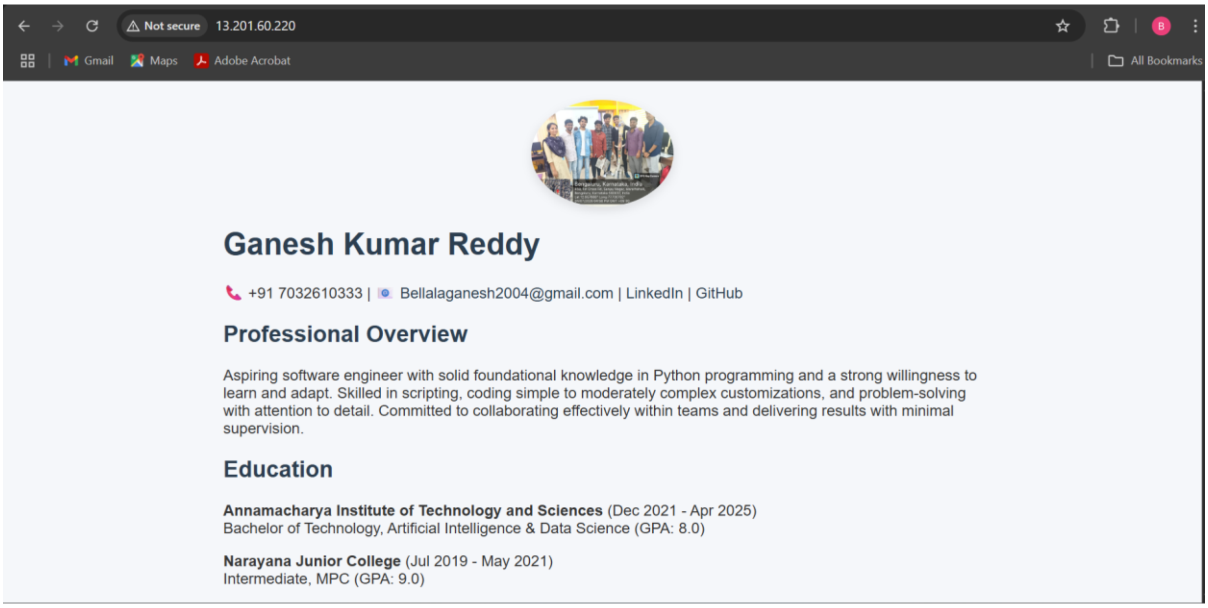
1. In **Route 53 > Registered Domains**, click **Register Domain** and search for your desired name.
2. Complete the registration and payment steps.
3. After registration, AWS sets up a Hosted Zone for your domain.
4. If using another registrar, update your domain’s nameservers to those provided by AWS Route 53.

AWS Cloud Infrastructure Deployment and Automation

18. Configure Route 53 with CloudFront

How:

1. In **Route 53 > Hosted zones**, select your domain.
2. Create a new record:
   - **Type:** A or AAAA (Alias).
   - **Name:** (e.g., www or leave blank for the root domain).
   - **Alias:** Yes.
   - **Alias Target:** Select your CloudFront distribution’s domain name (shows in drop-down if in the same account).
3. Save the record.



Ganesh Kumar Reddy

📞 +91 7032610333 | Bellalaganesh2004@gmail.com | LinkedIn | GitHub

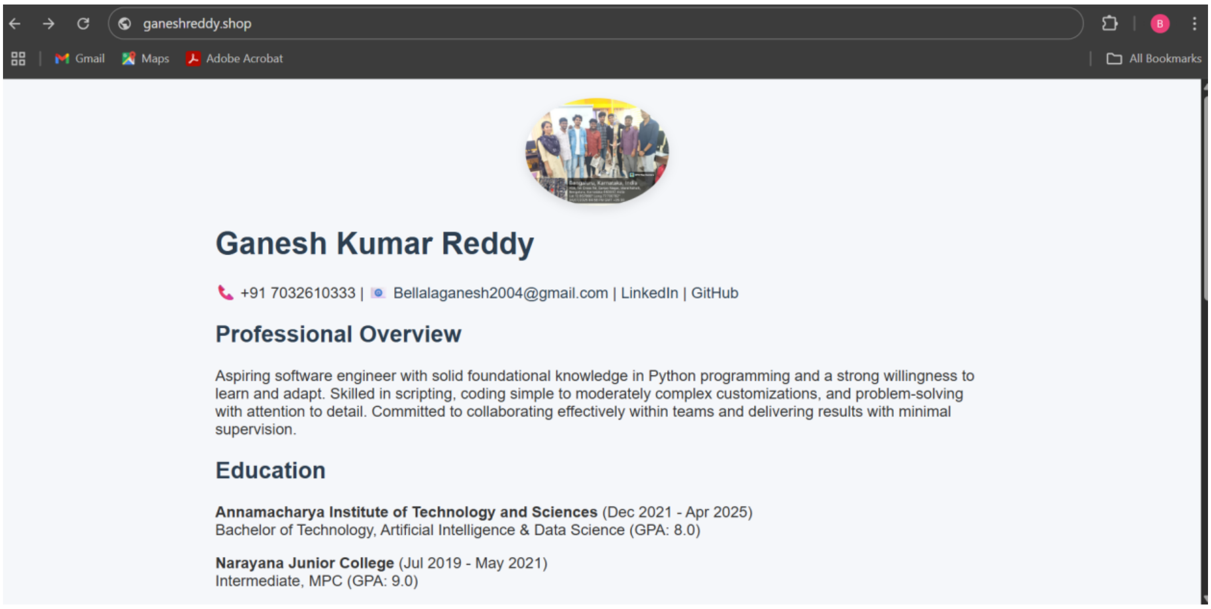
Professional Overview

Aspiring software engineer with solid foundational knowledge in Python programming and a strong willingness to learn and adapt. Skilled in scripting, coding simple to moderately complex customizations, and problem-solving with attention to detail. Committed to collaborating effectively within teams and delivering results with minimal supervision.

Education

Annamacharya Institute of Technology and Sciences (Dec 2021 - Apr 2025)
Bachelor of Technology, Artificial Intelligence & Data Science (GPA: 8.0)

Narayana Junior College (Jul 2019 - May 2021)
Intermediate, MPC (GPA: 9.0)



Ganesh Kumar Reddy

📞 +91 7032610333 | Bellalaganesh2004@gmail.com | LinkedIn | GitHub

Professional Overview

Aspiring software engineer with solid foundational knowledge in Python programming and a strong willingness to learn and adapt. Skilled in scripting, coding simple to moderately complex customizations, and problem-solving with attention to detail. Committed to collaborating effectively within teams and delivering results with minimal supervision.

Education

Annamacharya Institute of Technology and Sciences (Dec 2021 - Apr 2025)
Bachelor of Technology, Artificial Intelligence & Data Science (GPA: 8.0)

Narayana Junior College (Jul 2019 - May 2021)
Intermediate, MPC (GPA: 9.0)

Now, internet users who visit your domain will:

- Be routed via Route 53 (DNS).
- Go through CloudFront (CDN/caching).
- Reach your Application Load Balancer (ALB).
- Get served by available EC2 instances (managed by Auto Scaling Group—ASG).
- Benefit from secure HTTPS (provided by ACM certificate).