Jigmeboxinglist – Cloud Server Project Documentation

ICT171

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Project: JigmeBoxinglist – Top 10 Greatest Boxers of All Time

IP Address: 13.210.41.42

Domain: https://www.jigmeboxinglist.click/

https://www.jigmeboxinglist.click/blog/

GitHub repo: https://github.com/Jigmedorji12/infrastructure-project

Video Explainer:

https://www.loom.com/share/4e35b16c89e64f54848152922fd391b4?sid=c2e764f1-9f4e-4421-8fe9-fffb7a691c41

Project Overview:

Infrastructure Project Overview — ICT171

Project Title

"jigmeboxinglist.click" — A Tribute to the Greatest Boxers of All Time

Project Summary

This infrastructure project demonstrates the design, configuration, deployment, and management of a secure, cloud-hosted web server. The centrepiece is a website titled **jigmeboxinglist.click**, dedicated to showcasing the **Top 10 Greatest Boxers of All Time**, presented using HTML, CSS, and JavaScript to highlight educational content, historic data, and motivational quotes.

In addition to static web development, this project integrates WordPress as dynamic content management systems under specific routes (e.g., /blog), and deploys a VPN server to demonstrate broader server capabilities. Security was implemented through SSL/TLS encryption via HTTPS, and domain name configuration was managed through AWS Route 53.

All code and configuration are managed via **GitHub version control**, and custom scripting was developed to automate and maintain key parts of the infrastructure.

Learning Outcomes Demonstrated

- Proficiency with Linux CLI (Ubuntu server environment)
- Manual configuration of Apache web server, VPN, and CMS platforms
- GitHub usage for collaborative version control and project tracking
- Practical understanding of server-side scripting and automation
- Implementation of IaaS with domain binding and TLS encryption
- System documentation and structured project planning

Project Timeline

Week	Tasks Completed
Week 1	EC2 setup and Route 53 domain configuration
Week 2	Installed WordPress (/blog)
Week 3	Configured OpenVPN server
Week 4	Enabled SSL/TLS (HTTPS), committed to GitHub, finalized documentation

Server Setup step (Amazon EC2, Ubuntu)

1. Launch a New EC2 Instance
Go to the AWS EC2 Dashboard and click "Launch Instance". Choose Ubuntu 20.04 LTS and make sure it's Free Tier Eligible.

2. Choose Instance Type
Select the default t2.micro instance type (free tier eligible), then click Next.

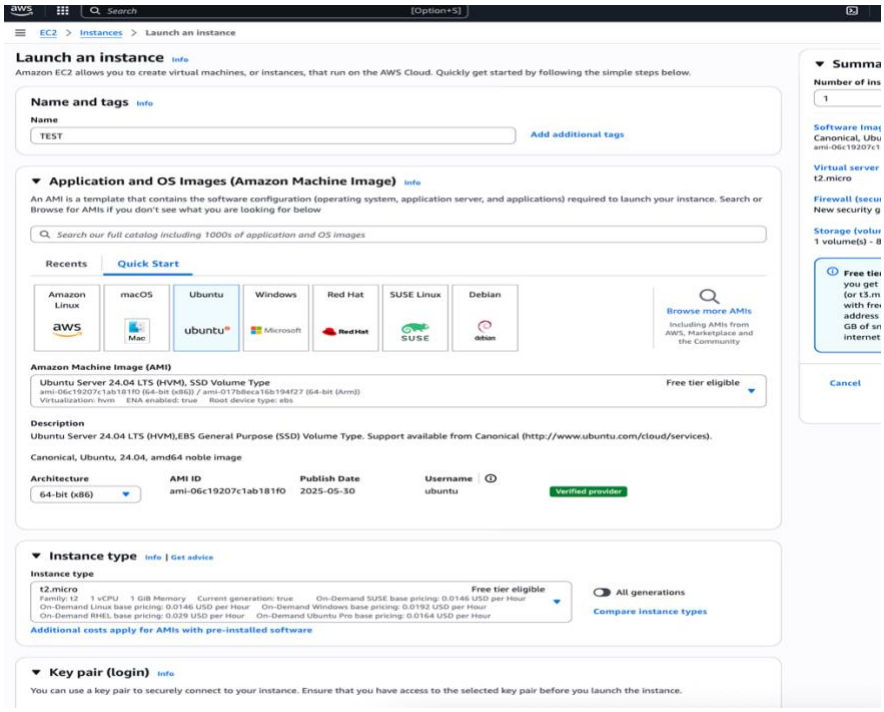
3. Configure Instance & Storage
Leave the instance settings as default.
On the Add Storage step, accept the default 8GB — that's enough for basic use.

4. Skip Tags and Set Up Security Group
Skip the "Add Tags" section.
In Configure Security Group:

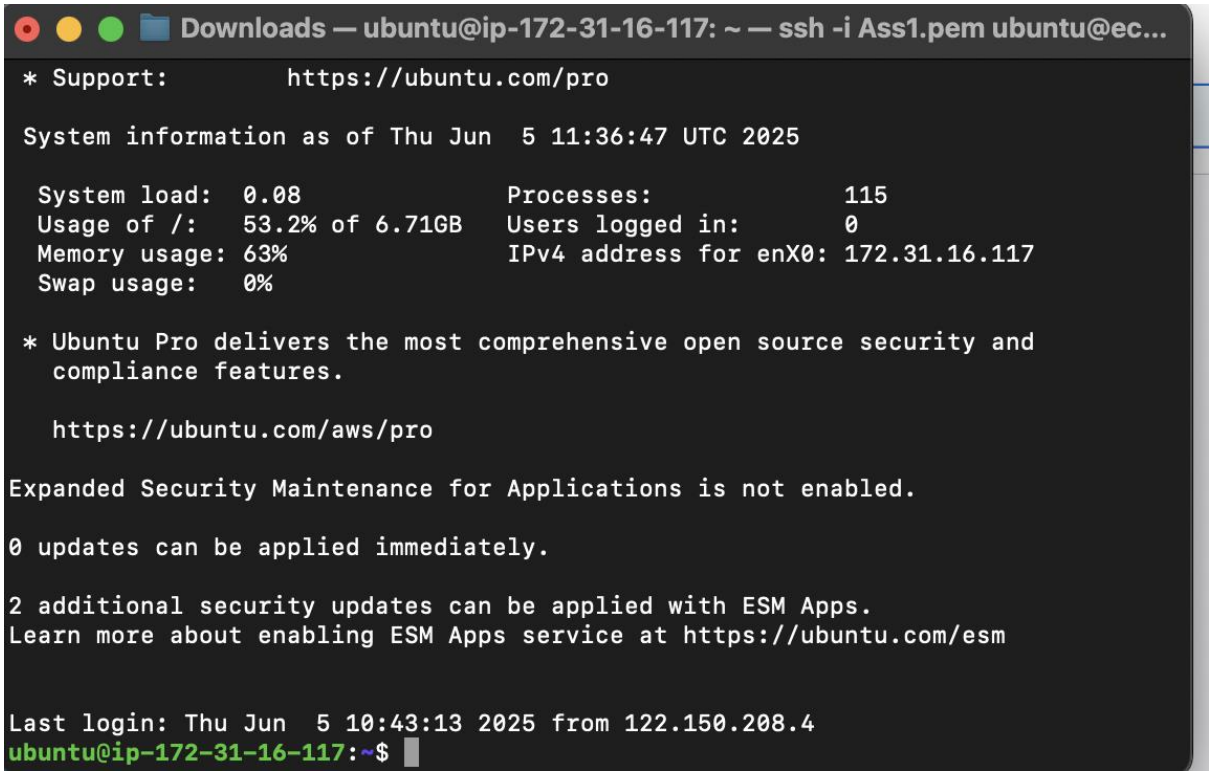
- Name it: ssh-and-web
- Keep the default SSH rule.
- Click "Add Rule", choose HTTP, and leave source as Anywhere (0.0.0.0/0) to allow web traffic.

5. Review and Launch
Review your settings. AWS may warn that the server is open to the world — this is fine for a public website.
Click Launch.

6. Create Key Pair and Final Launch
When prompted, create a new key pair (e.g., webserver-key).
Download the .pem file and keep it safe — you'll need it to access your server.
Click Launch Instance, then View Instance to monitor its status.



7. Go onto your command line like terminal and enter: ssh -i "yourkeyname.pem" ubuntu@ec2-12-123-1-35.ap-southwest-5.compute.amazonaws.com

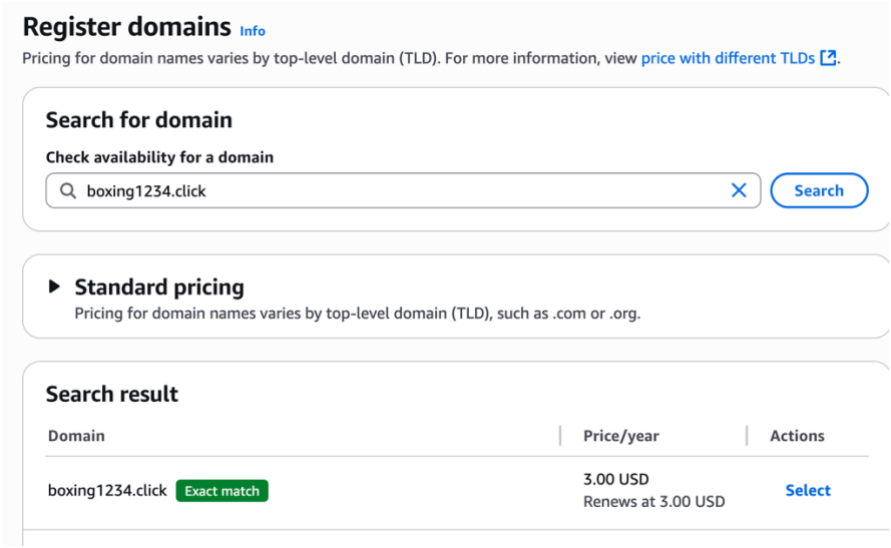


8. You then Install Apache by entering this command:
Sudo Apt update
Sudo apt install apache2

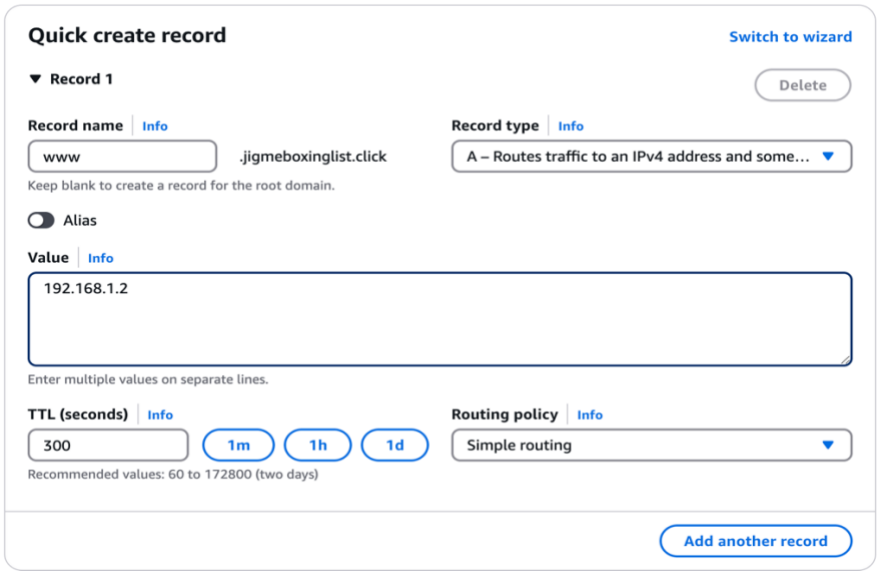
9. Test this by visiting your webserver by entering your IP into the web browser

Domaine Name and DNS (Route 53)

1. On the AWS console search up Route 53
2. On the left side go on domains section and click on registered domains
3. Once you are in, click on register domains
4. Enter a domain name that suits your topic (use .click for the cheapest domain) and select the domain

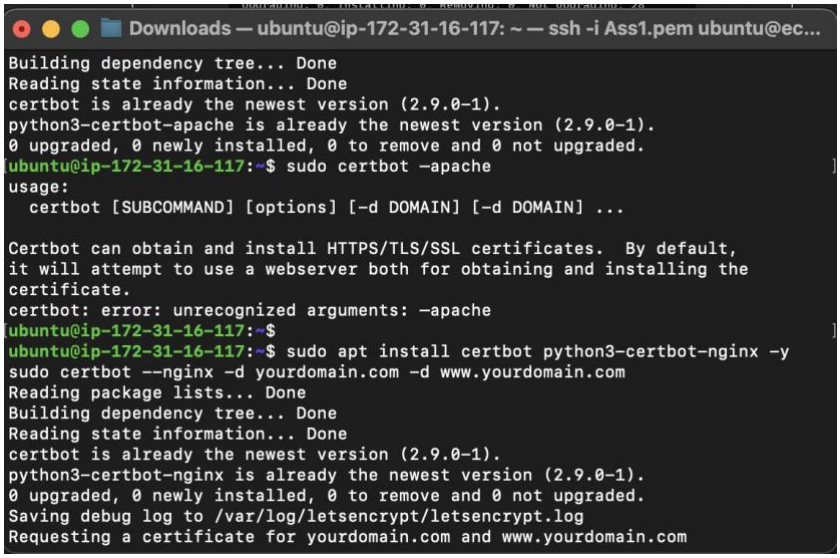


5. Proceed to check out and fill in your information and once it is done wait 10-20 minutes to show up on the register domains section
6. On the left section, select hosted zones, click on your new domains and click on view details, once your in click on create records.
7. Under record name use “www”, under value type in your website public ip address, make sure it a A type record, you can keep the rest on default and click. Create.

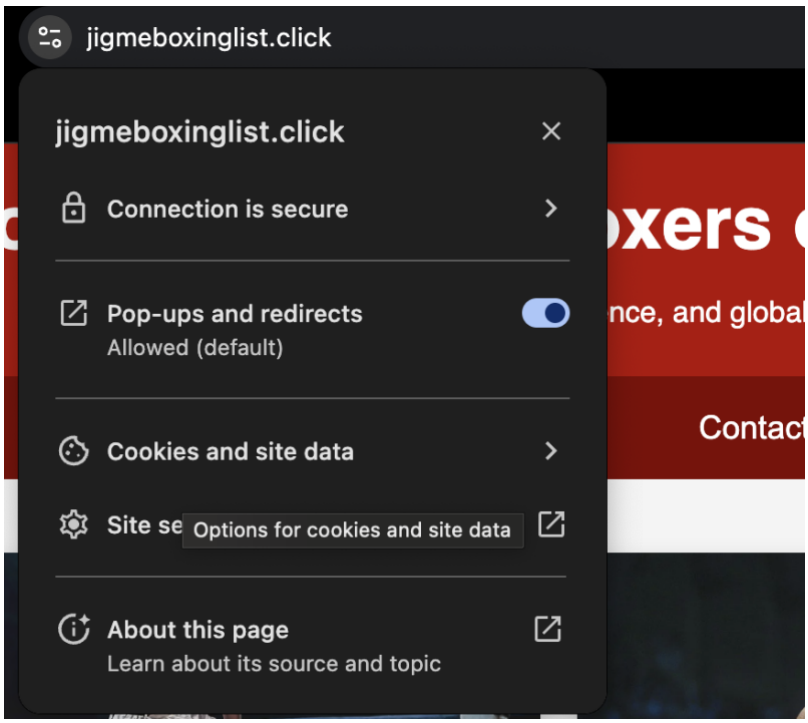


SSL/TLS Certbot

1. Install Certbot, on the command link enter:
ssh -i your-key.pem ubuntu@13.210.41.42
sudo apt update
sudo apt install certbot python3-certbot-nginx -y
sudo certbot --nginx -d yourdomain.com -d www.yourdomain.com

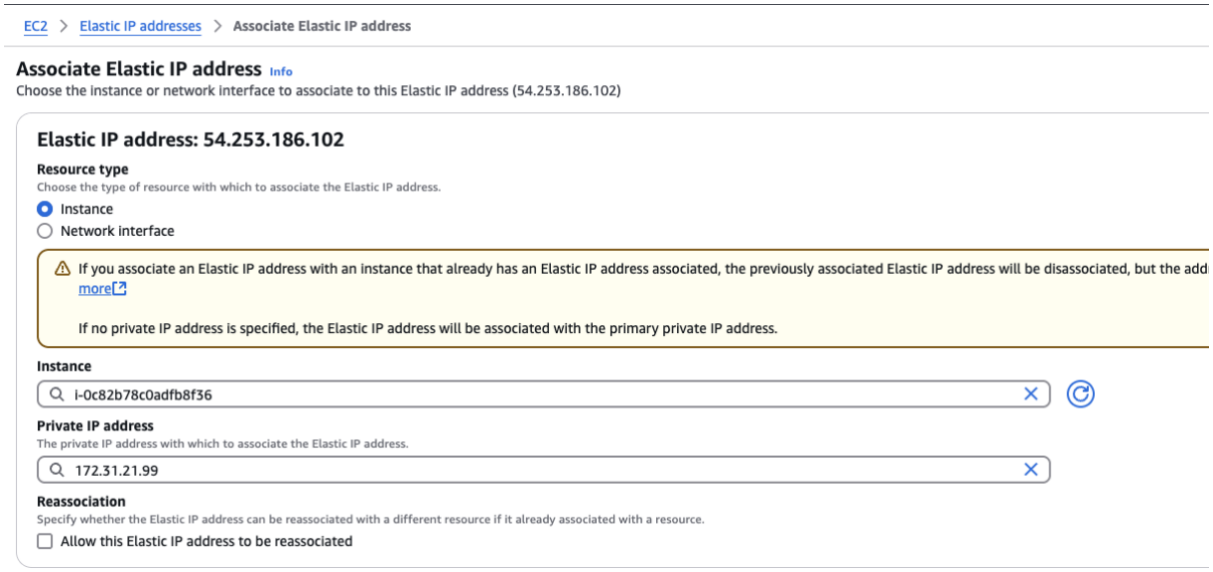


9. Check your website it should now be secure and your domain working



ELASTIC IP

1. ON the EC2 section under network and security click on elastic Ips
2. select Allocate Elastic IP address, you can leave the rest defaults then click allocate
3. once it been made select the elastic IP you made
4. click on action and select associated elastic IP address
5. choose the your web server on the instance and select the private IP address



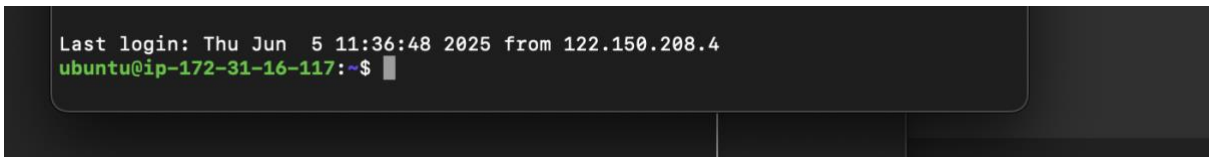
SSH

1. Make sure your Key pair your created is in your downloads
2. Then on your command link use:

Cd Downloads (once you are in downloads then enter this:

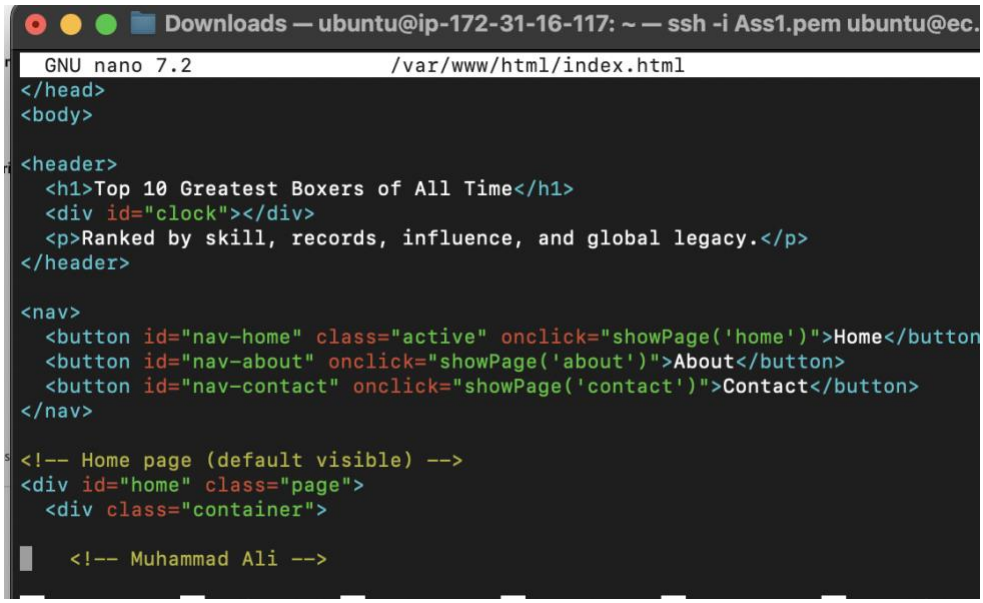
ssh -i "yourkeyname.pem" ubuntu@ec2-12-123-1-35.ap-southwest-5.compute.amazonaws.com

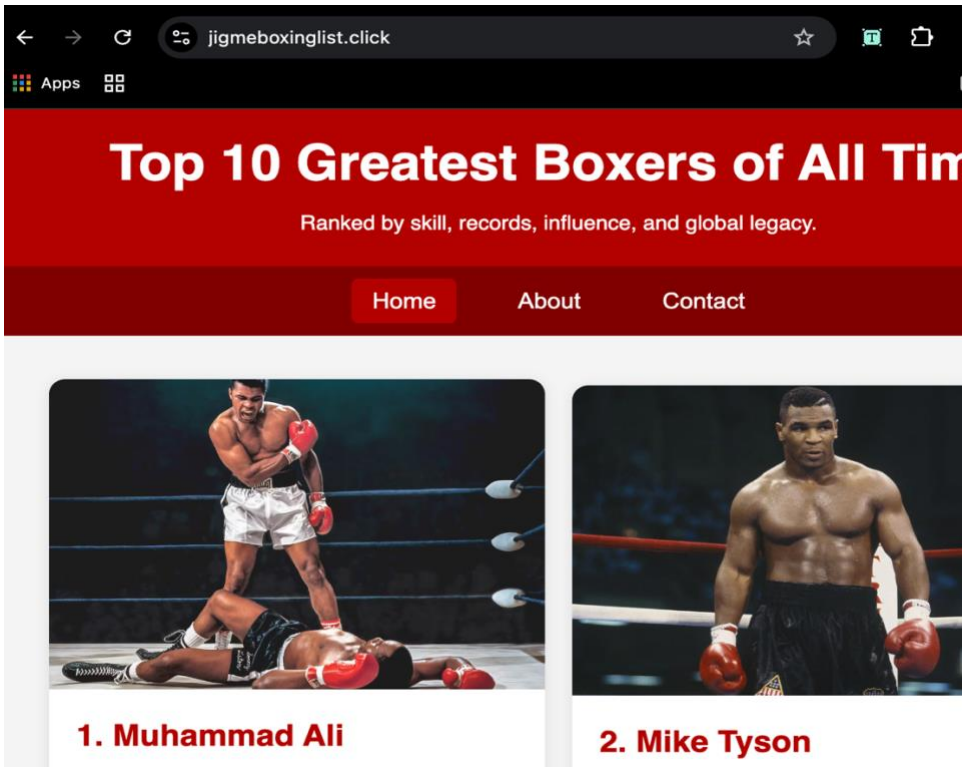
3. You will see you are now connect through SSH



Website Implementation

1. on the command link go:
ssh -i your-key.pem ubuntu@13.210.41.42
2. once you are in your web server
3. to modify your website enter this command line:
Sudo nano /var/www/html/index.html and copy your HTML/CSS script into it





WordPress

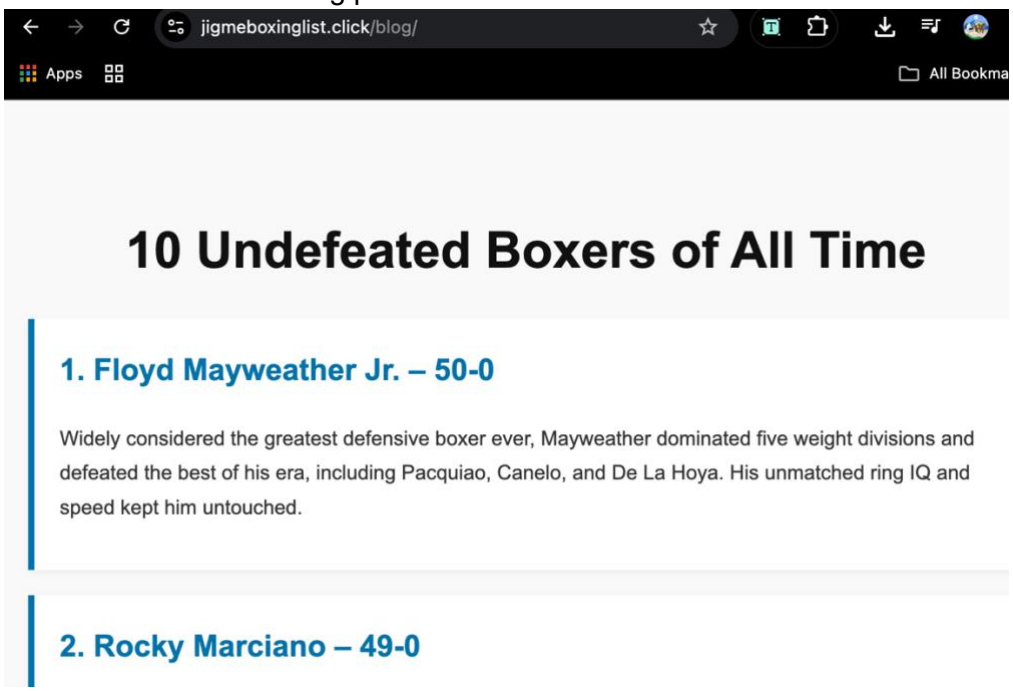
1. Install WordPress on EC2 (Short Steps)
Connect to EC2:
ssh -i "Ass1.pem" ubuntu@your-ec2-address
2. Install Software:
sudo apt update
sudo apt install apache2 php libapache2-mod-php php-mysql mysql-server unzip wget -y
3. Download WordPress
cd /tmp
wget https://wordpress.org/latest.zip
unzip latest.zip

```
ubuntu@ip-172-31-16-117:~$ cd /tmp
wget https://wordpress.org/latest.zip
unzip latest.zip
sudo mv wordpress /var/www/html/blog
--2025-06-06 04:43:25--  https://wordpress.org/latest.zip
Resolving wordpress.org (wordpress.org)... 198.143.164.252
Connecting to wordpress.org (wordpress.org)|198.143.164.252|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 28551696 (27M) [application/zip]
Saving to: 'latest.zip'

latest.zip           10%[=>                  ]   2.84M   152KB/s    eta 2m 46s
```

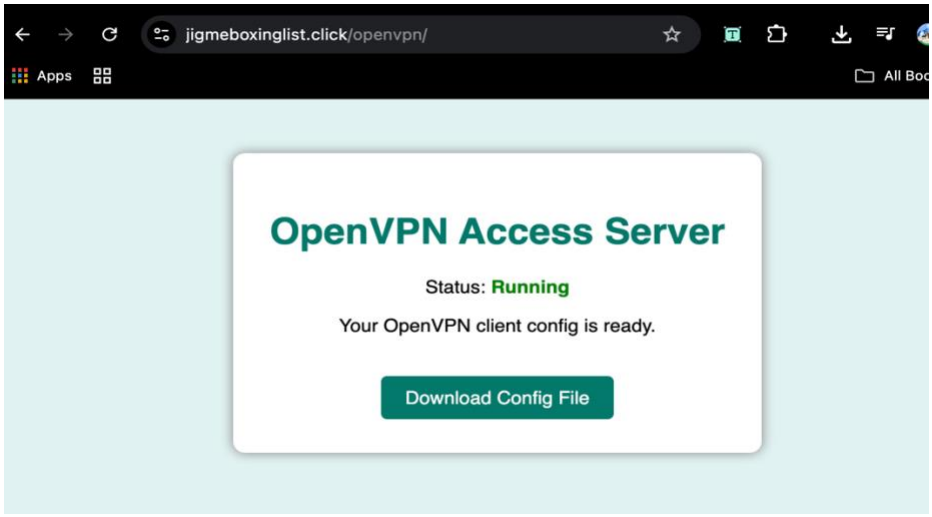
sudo mv wordpress /var/www/html/blog
4. Set Permissions
sudo chown -R www-data:www-data /var/www/html/blog
sudo chmod -R 755 /var/www/html/blog
5. Create MySQL Database
CREATE DATABASE wordpress_blog;
CREATE USER 'wpuser'@'localhost' IDENTIFIED BY 'StrongPass123!';
GRANT ALL PRIVILEGES ON wordpress_blog.* TO 'wpuser'@'localhost';
FLUSH PRIVILEGES;
6. Restart Apache:
sudo systemctl restart apache2
7. Run WordPress Setup in Browser
👉 https://www.jigmeboxinglist.click/blog/
Fill in DB name wordpress_blog, user wpuser, password StrongPass123!

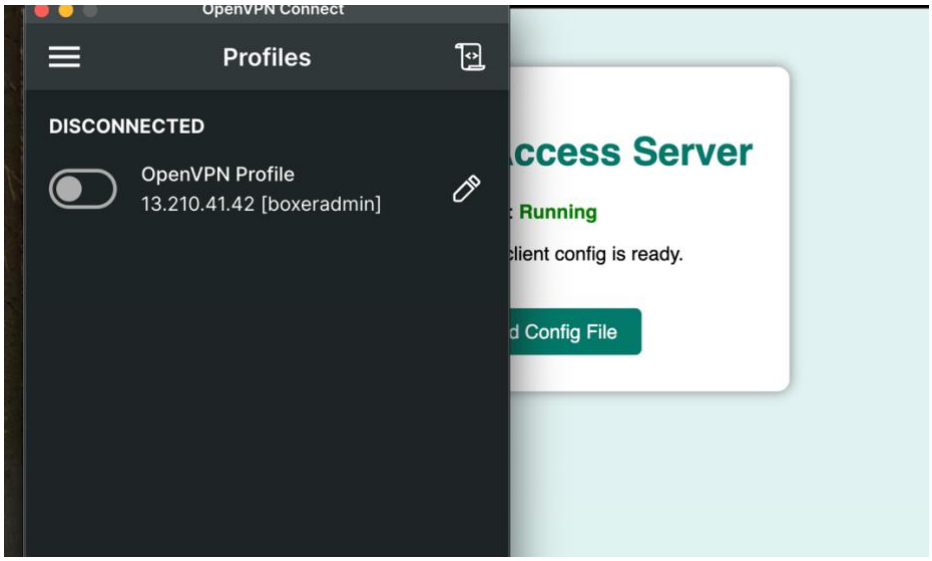
8. After Setup – Customize Your Blog
Login to Admin Panel
https://www.jigmeboxinglist.click/blog/wp-admin
9. You can create the Blog post



VPN

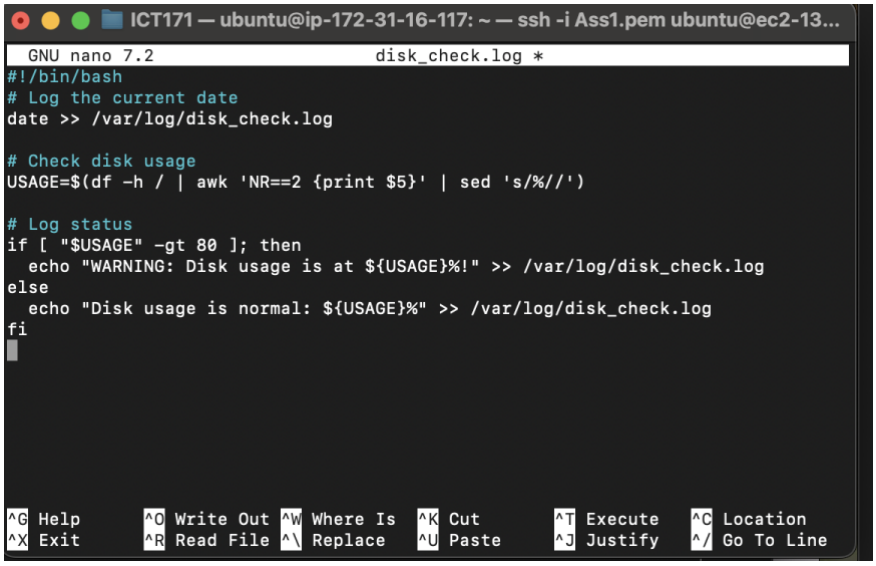
1. Update & Install Packages:
sudo apt update && sudo apt upgrade -y
sudo apt install openvpn easy-rsa -y
2. Set Up Easy-RSA PKI
make-cadir ~/openvpn-ca
cd ~/openvpn-ca
nano vars # Edit values: country, city, org
3. Build CA & Server Certificates
./easyrsa init-pki
./easyrsa build-ca
./easyrsa gen-req server nopass
./easyrsa sign-req server server
./easyrsa gen-dh
openvpn --genkey --secret ta.key
4. Create Client Certificate
./easyrsa gen-req jigme-client nopass
./easyrsa sign-req client jigme-client
5. Configure Server
sudo gunzip -c /usr/share/doc/openvpn/examples/sample-config-files/server.conf.gz | sudo tee /etc/openvpn/server.conf
sudo nano /etc/openvpn/server.conf
# Make sure these lines are enabled:
# tls-auth, cipher, auth, user nobody, group nogroup
6. Copy Certs & Keys to OpenVPN
sudo cp ~/openvpn-ca/pki/ca.crt /etc/openvpn/
sudo cp ~/openvpn-ca/pki/issued/server.crt /etc/openvpn/
sudo cp ~/openvpn-ca/pki/private/server.key /etc/openvpn/
sudo cp ~/openvpn-ca/pki/dh.pem /etc/openvpn/
sudo cp ~/openvpn-ca/ta.key /etc/openvpn/
7. Enable IP Forwarding
sudo nano /etc/sysctl.conf
# Un-comment: net.ipv4.ip_forward=1
sudo sysctl -p
9. Start OpenVPN
sudo systemctl start openvpn@server
sudo systemctl enable openvpn@server
sudo systemctl status openvpn@server


jigmeboxinglist.click/openvpn/
Apps
OpenVPN Access Server
Status: Running
Your OpenVPN client config is ready.
Download Config File


OpenVPN Connect
Profiles
DISCONNECTED
OpenVPN Profile
13.210.41.42 [boxeradmin]
ccess Server
Running
lient config is ready.
d Config File

Script

Purpose: Checks server disk usage and logs warning if usage exceeds 80%
On the command line go:
Cd ~
nano disk_check.sh
enter:
#!/bin/bash
Log the current date
date >> /var/log/disk_check.log
# Check disk usage
USAGE=$(df -h / | awk 'NR==2 {print $5}' | sed 's/%//')
# Log status
if ["$USAGE" -gt 80]; then
 echo "WARNING: Disk usage is at ${USAGE}%!" >> /var/log/disk_check.log
else
 echo "Disk usage is normal: ${USAGE}%" >> /var/log/disk_check.log
fi



This Monitors your server's root disk space. Logs a warning message if usage exceeds 80%.
Run this command line:
crontab -e
Add this line to check every hour:
0 * * * * /bin/bash /path/to/disk-check.sh
This Runs every hour and logs disk space info. Helps catch low storage issues before they cause problems.

Sudo cat /var/log/disk_check.log