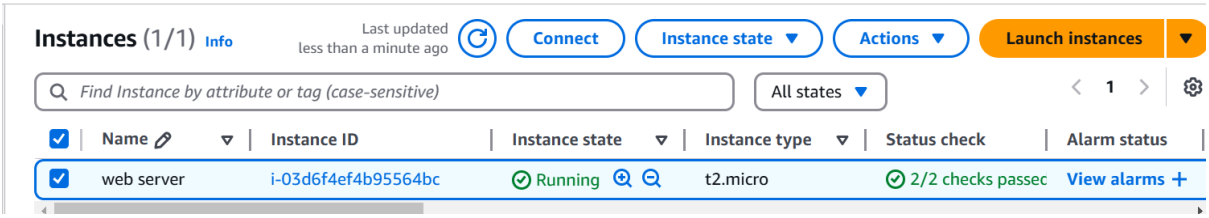
Configure a Linux VM

Objective

- Nginx as a reverse proxy.
- Firewall rules to allow only HTTP/HTTPS traffic.
- A custom 404 error page

Step 1: Launch an EC2 Instance on AWS

Launch a new EC2 instance:



Step 2: Install and Configure Nginx

Update the system and install Nginx:

sudo apt update -y

sudo apt install nginx -y

```
ubuntu@ip-172-31-94-238:~$ nginx -V
nginx version: nginx/1.24.0 (Ubuntu)
built with OpenSSL 3.0.13 30 Jan 2024
TLS SNI support enabled
```

Step 3: Start and Enable Nginx:

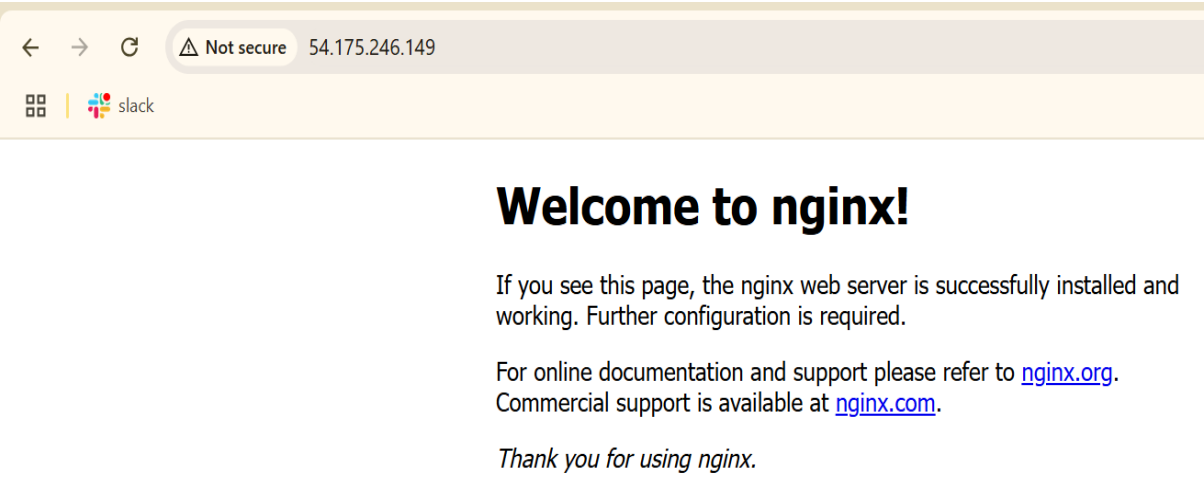
```
ubuntu@ip-172-31-94-238:~$ sudo systemctl start nginx
ubuntu@ip-172-31-94-238:~$ sudo systemctl status nginx
● nginx.service - A high performance web server and a reverse proxy server
     Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; preset: enabled)
     Active: active (running) since Tue 2024-12-17 08:59:16 UTC; 3min 19s ago
       Docs: man:nginx(8)
    Process: 1991 ExecStartPre=/usr/sbin/nginx -t -q -g daemon on; master_process on; (code=exited, status=0/SUCCESS)
    Process: 1993 ExecStart=/usr/sbin/nginx -g daemon on; master_process on; (code=exited, status=0/SUCCESS)
   Main PID: 1994 (nginx)
      Tasks: 2 (limit: 1130)
     Memory: 1.7M (peak: 1.9M)
        CPU: 12ms
     CGroup: /system.slice/nginx.service
             ├─1994 "nginx: master process /usr/sbin/nginx -g daemon on; master_process on;"
             └─1995 "nginx: worker process"

Dec 17 08:59:16 ip-172-31-94-238 systemd[1]: Starting nginx.service - A high performance web server and a reverse proxy serve>
Dec 17 08:59:16 ip-172-31-94-238 systemd[1]: Started nginx.service - A high performance web server and a reverse proxy server.
lines 1-16/16 (END)
```

Step 4: Verify Nginx:

Visit the EC2 **public IP** in a browser: http://<instance-public-ip>

You should see the default Nginx welcome page.



Step 5: Configure Nginx as a Reverse Proxy

1. Edit the Nginx configuration

   sudo nano /etc/nginx/nginx.conf

2. Configure a reverse proxy:

```
server {
    listen 80;
    server_name  52.90.189.24;

    location / {
        proxy_pass 52.90.189.24;
        proxy_set_header Host $host;
        proxy_set_header X-Real-IP $remote_addr;
        proxy_set_header X-Forwarded-For $proxy_add_x_forwarded_for;
        proxy_set_header X-Forwarded-Proto $scheme;
}

  error_page 404 /custom_404.html;
    location = /custom_404.html {
        root /var/www/html;
        internal;
    }
}
```

3. Test Nginx configuration:

```
ubuntu@ip-172-31-94-238:/etc/nginx/conf.d$ sudo nginx -t
nginx: the configuration file /etc/nginx/nginx.conf syntax is ok
nginx: configuration file /etc/nginx/nginx.conf test is successful
```

4. Reload Nginx:
   sudo systemctl reload nginx

Step 4: Set Up a Custom 404 Error Page

1. **Create a custom 404 HTML file**:
   sudo nano /var/www/html/custom_404.html