

Day 08 – Cloud Server Setup: Docker, Nginx & Web Deployment

Objective:

Deploy a real web server on a cloud VM and practice essential DevOps tasks such as:

Cloud provisioning, SSH access, Installing and managing services,

Configuring security rules, Extracting and backing up logs.

Cloud Environment:

Cloud Provider: AWS EC2

OS: Ubuntu

Instance Type: t2.micro

Region: ap-southeast-2

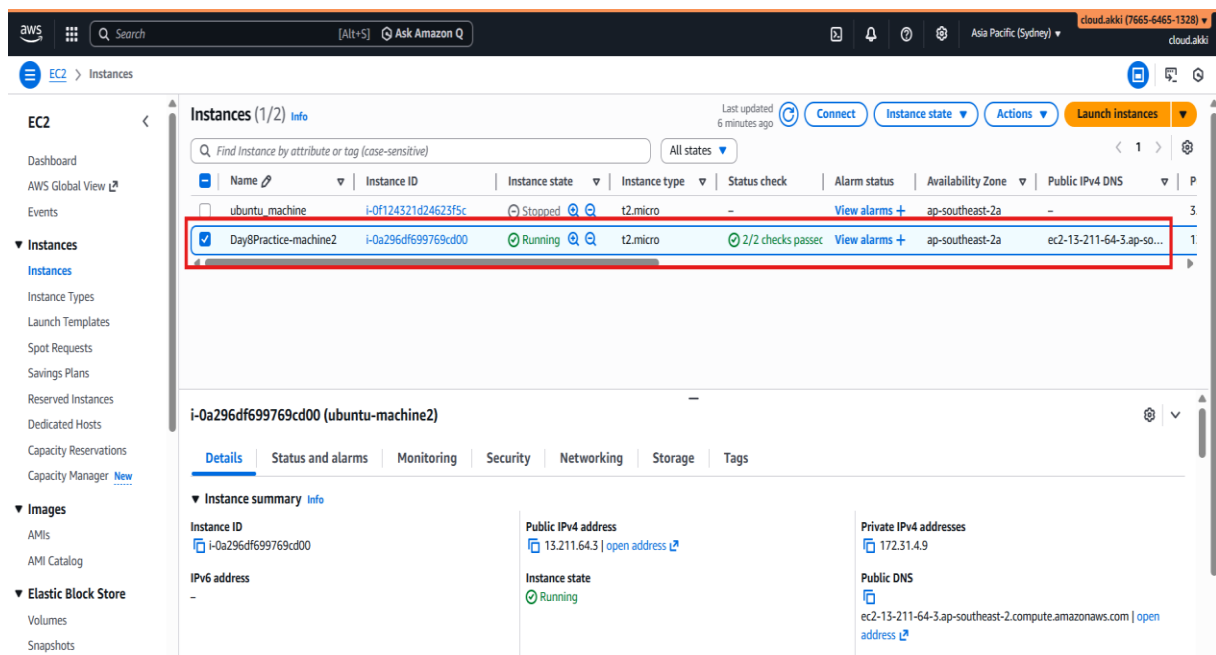
Web Server: Nginx

Container Engine: Docker

Lab Tasks Performed:

1- Launch EC2 Instance & SSH Access

Created EC2 instance and connected using SSH.



2- connected using SSH and system update

```
root@akash: /home/ubuntu
root@akash:/home/ubuntu# apt update
Hit:1 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://ap-southeast-2.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
78 packages can be upgraded. Run 'apt list --upgradable' to see them.
root@akash:/home/ubuntu#
```

3-Install Nginx

```
root@akash: /home/ubuntu
No user sessions are running outdated binaries.
No VM guests are running outdated hypervisor (qemu) binaries on this host.
root@akash:/home/ubuntu# 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 Wed 2026-02-04 11:32:39 UTC; 31s ago
     Docs: man:nginx(8)
   Process: 1978 ExecStartPre=/usr/sbin/nginx -t -q -g daemon on; master_process on; (code=0)
   Process: 1980 ExecStart=/usr/sbin/nginx -g daemon on; master_process on; (code=0)
  Main PID: 2008 (nginx)
    Tasks: 2 (limit: 1121)
   Memory: 1.7M (peak: 3.7M)
      CPU: 13ms
   CGroup: /system.slice/nginx.service
           └─2008 "nginx: master process /usr/sbin/nginx -g daemon on; master_process on;"
             └─2010 "nginx: worker process"

Feb 04 11:32:39 akash.com systemd[1]: Starting nginx.service - A high performance web server and a reverse proxy server:
Feb 04 11:32:39 akash.com systemd[1]: Started nginx.service - A high performance web server and a reverse proxy server:
lines 1-16/16 (END)
```

#sudo apt update

#sudo apt install nginx -y

#sudo systemctl start nginx

#sudo systemctl enable nginx

#sudo systemctl status nginx

4-Install Docker

```
root@akash: /home/ubuntu
root@akash:/home/ubuntu# systemctl status docker
● docker.service - Docker Application Container Engine
   Loaded: loaded (/usr/lib/systemd/system/docker.service; enabled; preset: e
   Active: active (running) since Wed 2026-02-04 11:37:17 UTC; 18s ago
   TriggeredBy: ● docker.socket
   Docs: https://docs.docker.com
   Main PID: 2522 (dockerd)
   Tasks: 8
   Memory: 94.2M (peak: 94.5M)
   CPU: 317ms
   CGroup: /system.slice/docker.service
           └─2522 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/cont>

Feb 04 11:37:16 akash.com dockerd[2522]: time="2026-02-04T11:37:16.844616333Z" >
Feb 04 11:37:17 akash.com dockerd[2522]: time="2026-02-04T11:37:17.219020977Z" >
Feb 04 11:37:17 akash.com dockerd[2522]: time="2026-02-04T11:37:17.257172257Z" >
Feb 04 11:37:17 akash.com dockerd[2522]: time="2026-02-04T11:37:17.257443287Z" >
Feb 04 11:37:17 akash.com dockerd[2522]: time="2026-02-04T11:37:17.276238295Z" >
Feb 04 11:37:17 akash.com dockerd[2522]: time="2026-02-04T11:37:17.276368045Z" >
Feb 04 11:37:17 akash.com dockerd[2522]: time="2026-02-04T11:37:17.308437780Z" >
Feb 04 11:37:17 akash.com dockerd[2522]: time="2026-02-04T11:37:17.318676736Z" >
Feb 04 11:37:17 akash.com dockerd[2522]: time="2026-02-04T11:37:17.318773888Z" >
Feb 04 11:37:17 akash.com systemd[1]: Started docker.service - Docker Applicati>
lines 1-22/22 (END)
```

```
#sudo apt install docker.io -y
```

```
#sudo systemctl start docker
```

```
#sudo systemctl enable docker
```

```
#sudo systemctl status docker
```

5-Configure SecurityGroup

Inbound rule added:

HTTP – Port 80

HTTPS– Port 443

SSH – Port 22

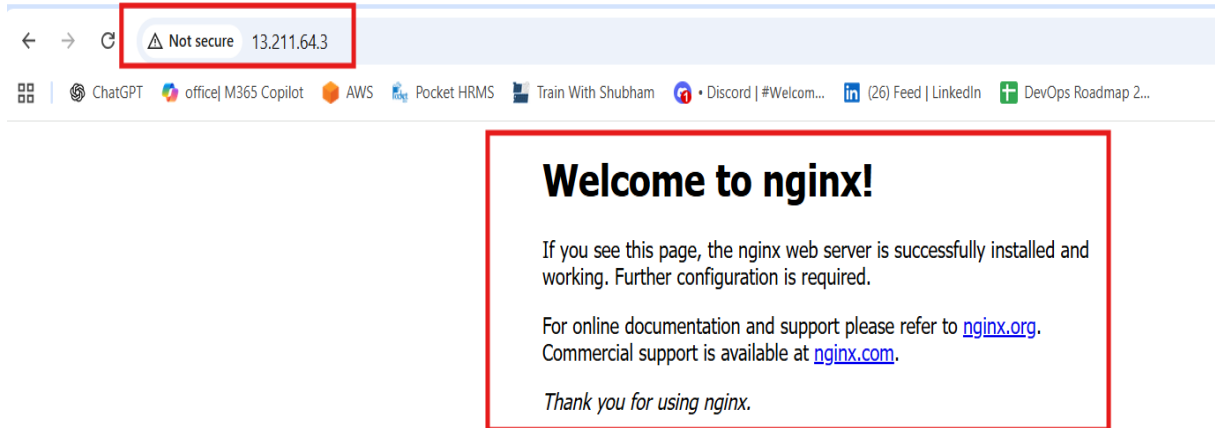
The screenshot shows the AWS Management Console for a Security Group named 'sg-022c3504b483ec05d - launch-wizard-1'. The 'Inbound rules' tab is selected, displaying a table with three inbound rules:

Name	Security group rule ID	IP version	Type	Protocol	Port range	Source
-	sgr-0ae1bb58db06afc74	IPv4	SSH	TCP	22	0.0.0.0/0
-	sgr-0d1a54954e4be01e1	IPv4	HTTPS	TCP	443	0.0.0.0/0
-	sgr-0ecb34dcad89fa1a4	IPv4	HTTP	TCP	80	0.0.0.0/0

Verify Web Access

Accessed Nginx using public IP:

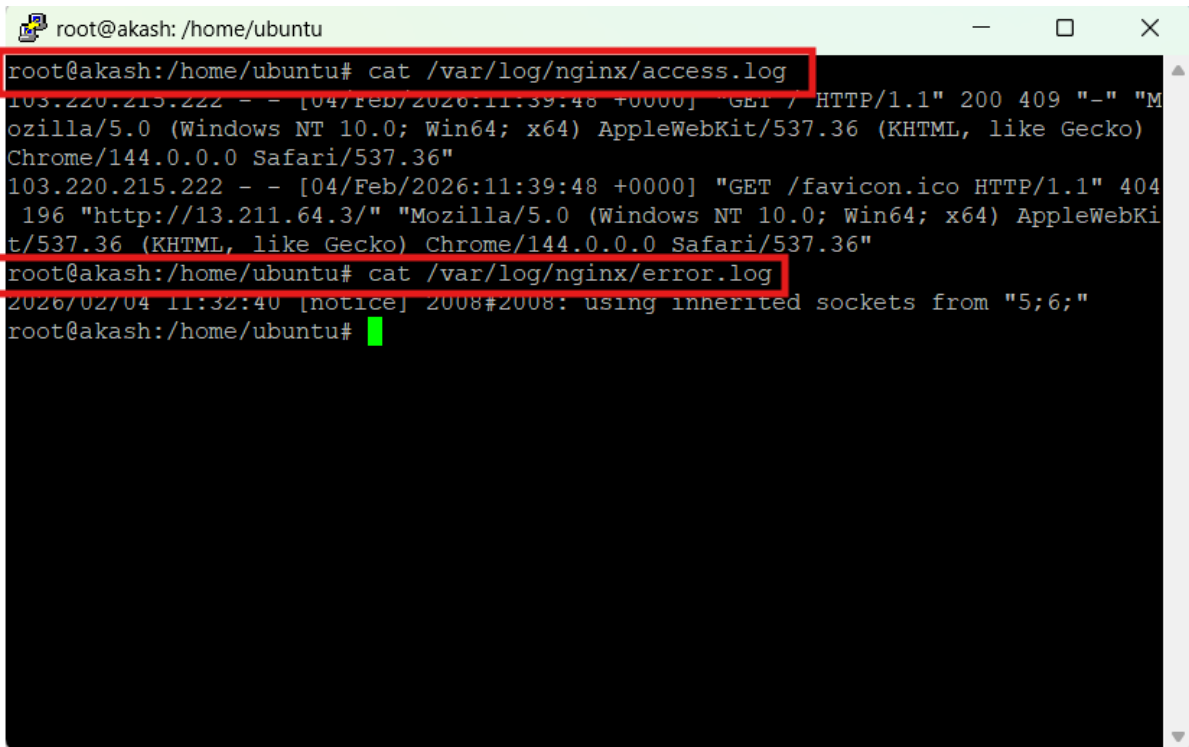
<http://13.211.64.3>



Extract Nginx Logs

#cat /var/log/nginx/access.log

#cat /var/log/nginx/error.log

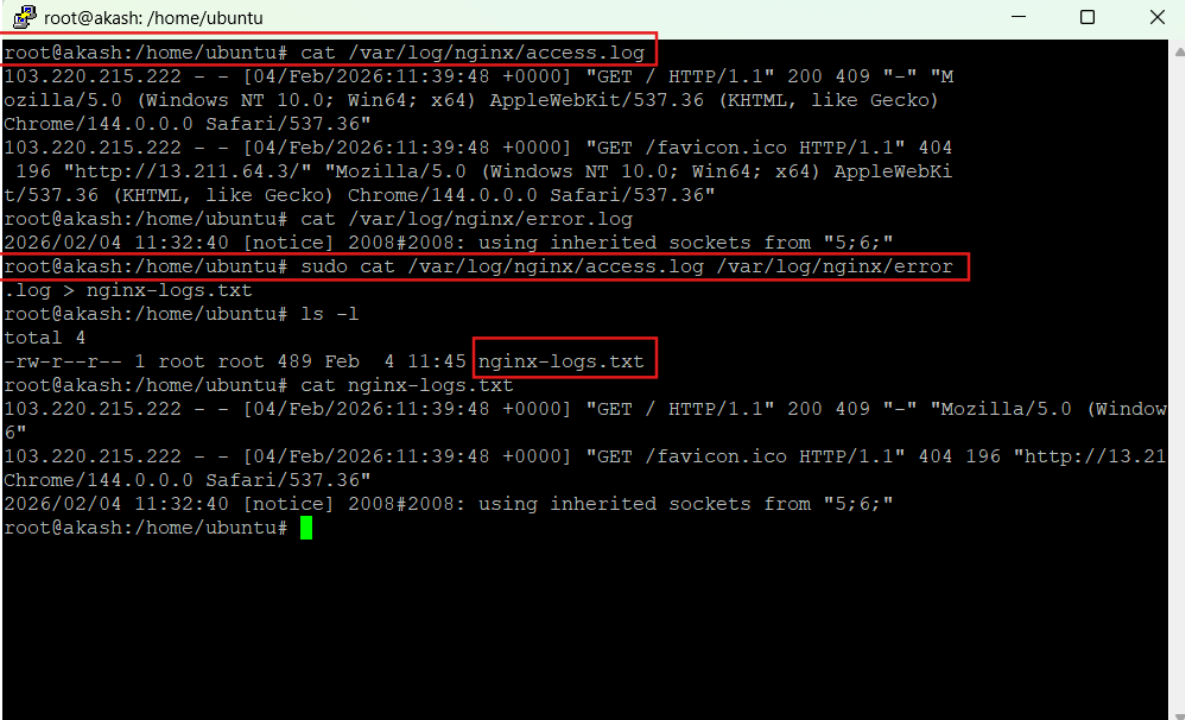


Save Logs to File

```
#sudo cat /var/log/nginx/access.log /var/log/nginx/error.log > nginx-logs.txt
```

```
#ls -l
```

```
#Scat nginx-logs.txt
```

A terminal window titled 'root@akash: /home/ubuntu' with standard window controls. The terminal shows a sequence of commands and their outputs. Red boxes highlight specific parts: the first command, the file path in the second command, the file name in the third command, and the file name in the fourth command. The output of the fourth command shows the file 'nginx-logs.txt' with permissions '-rw-r--r--' and size '4' bytes.

```
root@akash:/home/ubuntu# cat /var/log/nginx/access.log
103.220.215.222 - - [04/Feb/2026:11:39:48 +0000] "GET / HTTP/1.1" 200 409 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/144.0.0.0 Safari/537.36"
103.220.215.222 - - [04/Feb/2026:11:39:48 +0000] "GET /favicon.ico HTTP/1.1" 404 196 "http://13.211.64.3/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/144.0.0.0 Safari/537.36"
root@akash:/home/ubuntu# cat /var/log/nginx/error.log
2026/02/04 11:32:40 [notice] 2008#2008: using inherited sockets from "5;6;"
root@akash:/home/ubuntu# sudo cat /var/log/nginx/access.log /var/log/nginx/error.log > nginx-logs.txt
root@akash:/home/ubuntu# ls -l
total 4
-rw-r--r-- 1 root root 489 Feb  4 11:45 nginx-logs.txt
root@akash:/home/ubuntu# cat nginx-logs.txt
103.220.215.222 - - [04/Feb/2026:11:39:48 +0000] "GET / HTTP/1.1" 200 409 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/144.0.0.0 Safari/537.36"
103.220.215.222 - - [04/Feb/2026:11:39:48 +0000] "GET /favicon.ico HTTP/1.1" 404 196 "http://13.211.64.3/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/144.0.0.0 Safari/537.36"
2026/02/04 11:32:40 [notice] 2008#2008: using inherited sockets from "5;6;"
root@akash:/home/ubuntu#
```

Commands Used (Summary):

`sudo apt update`

`sudo apt install nginx -y`

`sudo systemctl start nginx`

`sudo systemctl enable nginx`

`sudo systemctl status nginx`

`sudo apt install docker.io -y`

`sudo systemctl start docker`

`sudo systemctl enable docker`

`sudo systemctl status docker`

`cat /var/log/nginx/access.log`

`cat /var/log/nginx/error.log`

`sudo cat /var/log/nginx/access.log /var/log/nginx/error.log > nginx-logs.txt`

Challenges Faced:

Website not accessible – Allowed port 80 in AWS Security Group

Permission denied on logs – Used sudo

Service persistence – Enabled services using systemctl enable