



Deploy Multiple Streamlit Apps on Ubuntu VPS (Beginner-Friendly Guide)

This guide explains **everything step by step** to deploy **multiple Streamlit apps** on a **single Ubuntu VPS**, run them **24/7**, and access them securely using **custom domains + HTTPS (SSL)**.

By the end, you will have: - Multiple Streamlit apps running on different ports - Each app mapped to its own subdomain - Nginx acting as a reverse proxy - Free SSL certificates (Let's Encrypt) - Apps auto-starting after reboot

High-Level Architecture

```
Browser (HTTPS)
  ↓
Nginx (Port 443 / 80)
  ↓
Streamlit Apps (localhost)
  ├── 8501 → ssc.yashodeep.app
  ├── 8502 → health.yashodeep.app
  └── 8503 → agents.yashodeep.app
```

Prerequisites

VPS Requirements

- Ubuntu 20.04 / 22.04
- Root or sudo access
- Public IP address

Domain Setup

In your domain provider (Hostinger / GoDaddy / etc):

Create **A records**:

```
ssc.yashodeep.app    → VPS_IP
health.yashodeep.app → VPS_IP
agents.yashodeep.app → VPS_IP
```

System Update

```
sudo apt update && sudo apt upgrade -y
```

Install Required Software

Install Python & venv

```
sudo apt install python3 python3-venv python3-pip -y
```

Install Nginx

```
sudo apt install nginx -y  
sudo systemctl enable nginx  
sudo systemctl start nginx
```

Check:

```
systemctl status nginx
```

Install Streamlit

Inside each project folder:

```
python3 -m venv .venv  
source .venv/bin/activate  
pip install streamlit
```

Run Streamlit Apps Locally (IMPORTANT)

Each app must run on a **fixed port**.

Example

```
streamlit run app.py --server.port 8503 --server.address 127.0.0.1
```

Verify:

```
ss -tulnp | grep 8503
```

You must see:

```
127.0.0.1:8503
```

Run Streamlit Apps 24/7 (systemd)

Example: Agents App

```
sudo nano /etc/systemd/system/agents.service
```

```
[Unit]
Description=Agents Streamlit App
After=network.target

[Service]
User=root
WorkingDirectory=/opt/socialmedia-agent
ExecStart=/opt/socialmedia-agent/.venv/bin/streamlit run app.py --server.port
8503 --server.address 127.0.0.1
Restart=always

[Install]
WantedBy=multi-user.target
```

Enable & start:

```
sudo systemctl daemon-reload
sudo systemctl enable agents
sudo systemctl start agents
systemctl status agents
```

Repeat for other apps (change port + path).

Configure Nginx Reverse Proxy

```
sudo nano /etc/nginx/sites-available/yashodeep.conf
```

Example (Agents App)

```
server {  
    listen 443 ssl;  
    server_name agents.yashodeep.app;  
  
    location / {  
        proxy_pass http://127.0.0.1:8503;  
        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_http_version 1.1;  
        proxy_set_header Upgrade $http_upgrade;  
        proxy_set_header Connection "upgrade";  
    }  
}
```

Enable site:

```
sudo ln -s /etc/nginx/sites-available/yashodeep.conf /etc/nginx/sites-enabled/
```

Test:

```
nginx -t  
sudo systemctl reload nginx
```

Install SSL (HTTPS)

```
sudo apt install certbot python3-certbot-nginx -y
```

Run for each domain:

```
sudo certbot --nginx -d agents.yashodeep.app
sudo certbot --nginx -d health.yashodeep.app
sudo certbot --nginx -d ssc.yashodeep.app
```

Certbot will: - Create SSL certificates - Auto-edit nginx - Enable HTTPS - Auto-renew

Firewall Configuration

```
sudo ufw allow OpenSSH
sudo ufw allow 80
sudo ufw allow 443
sudo ufw enable
```

 **Do NOT open Streamlit ports publicly**

Common Errors & Fixes

502 Bad Gateway

Cause: App not running or wrong port

Check:

```
ss -tulnp | grep PORT
```

SSL Privacy Error

Cause: HTTP → HTTPS redirect without certificate

Fix: - Remove redirect - Run certbot

App Stops After Logout

Cause: Started via terminal

Fix: - Use `systemd`

Final Checklist

- [x] DNS A records
- [x] Streamlit running on fixed ports
- [x] Nginx reverse proxy
- [x] SSL enabled
- [x] systemd services
- [x] Survives reboot



Final Result

App	Domain	Status
SSC	https://ssc.yashodeep.app	✓
Health	https://health.yashodeep.app	✓
Agents	https://agents.yashodeep.app	✓

Pro Tips

- Never expose Streamlit ports publicly
- Always bind apps to `127.0.0.1`
- Always let certbot manage SSL
- Use one app = one port = one domain

You Did Great

You successfully deployed a **real production system** with: - Agentic AI - Ollama - CrewAI - Streamlit - Nginx - SSL

This is **industry-grade deployment**.



Keep building!