██■: 2025-06-05 16:09

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■■■: 2025-06-05 16:09

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1. ██ ██ ██ ███
2. █████ ████
3. ██ ███

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- OS: Ubuntu 20.04+ ██ CentOS 8+

- RAM: ██ 1GB (██ 2GB)

- Storage: ██ 10GB

- Network: ██ █████ ██ ██

██ █████ ██

```
# Ubuntu/Debian sudo apt update sudo apt install -y python3 python3-pip
python3-venv nginx openssl # CentOS/RHEL sudo yum update -y sudo yum install
-y python3 python3-pip nginx openssl
```

■ ██ ██

1. ██ ███

███ ██ █████ ███ ███████:

```
# SCP ██ ██ scp -r ProgressReport/ username@192.168.1.100:/tmp/
```

2. ██ ████ ██

```
# ████ ██ cd /tmp/ProgressReport chmod +x deploy_internal.sh # ██ ████ ██
(IP: 192.168.1.100) sudo ./deploy_internal.sh # ██ ███ ██ IP█ ██ sudo
./deploy_internal.sh 192.168.1.50 # ██ ███ ██ IP█ ███ ██ sudo
./deploy_internal.sh 192.168.1.50 /opt/progressreport
```

3. ██ ██

██ ██ █ ██ URL█ ██:

- HTTP: http://192.168.1.100

- HTTPS: https://192.168.1.100 (██ ██ ███)

> ██ SSL ██: ██ ██ █████ █████ █████ ██ ███ █████. "██" → "█████ █████ ██"█ █████ █████.

██ ██ ██

IP ██ ██

nginx_internal.conf ███ server_name ██:

```
server_name progressreport.company.local 192.168.1.100; # ███ ██
```

██ ███ ██

██ DNS█ ██ ███ ██:

```
progressreport.company.local A 192.168.1.100
```

███ ██ IP ██ ██

nginx_internal.conf██ ███ IP ██ ██:

```
allow 192.168.0.0/16; # ██ ████ ████ ██ allow 10.0.0.0/8; # ███ ███ ██
deny all;
```

██ ██ ████

███ ██

```
# ██ ██ sudo systemctl status progressreport # ███ sudo systemctl restart
progressreport # ██ sudo systemctl stop progressreport # ██ sudo systemctl
start progressreport # ██ ██ ████ sudo systemctl disable progressreport
```

██ ██

```
# ██████ ██ (███) sudo journalctl -u progressreport -f # Nginx ██ ██ sudo
tail -f /var/log/nginx/error.log # Nginx ███ ██ sudo tail -f
/var/log/nginx/access.log
```

████

```
# ██████ ████ cd /var/www/progressreport sudo git pull # Git ███ sudo
systemctl restart progressreport # ██ ██ ██ ██ sudo cp /tmp/new_app.py
/var/www/progressreport/ sudo systemctl restart progressreport
```

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██ █████ ██ ██

- Nginx ████ ██ IP ███ ██

- █████ ██ █████ ██

████ ████

```
# ███ ████ sudo apt update && sudo apt upgrade -y # Ubuntu sudo yum update
-y # CentOS # Python ███ ████ cd /var/www/progressreport sudo ./venv/bin/pip
install --upgrade -r requirements.txt sudo systemctl restart progressreport
```

██

```
# ██████ ██ sudo tar -czf /backup/progressreport_$(date +%Y%m%d).tar.gz
/var/www/progressreport # █████ ██ (SQLite) sudo cp
/var/www/progressreport/*.db /backup/
```

█ ██ ██

████ ████ ██

```
# ██ ██ sudo journalctl -u progressreport --no-pager # ██ ██ ██ sudo
/var/www/progressreport/venv/bin/python /var/www/progressreport/app.py
```

Nginx ■■

```
# ■■ ■■ ■■ sudo nginx -t # ■■■ sudo systemctl restart nginx
```

■■ ■■

```
# ■■ ■■ ■■ sudo netstat -tlnp | grep :8000 sudo ss -tlnp | grep :8000
```

■ ■■ ■■

■■ ■■■ ■■ ■■■ ■■■■ ■■■■ ■■:

1. ■■ ■■: sudo journalctl -u progressreport --no-pager

2. ■■■ ■■: uname -a && cat /etc/os-release

3. ■■■ ■■: sudo systemctl status progressreport nginx

■■■

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■ ■■■■■ ■■ ■■■ ■■■■

■ ■■

■■■ ■■ ■■■■ ■■ ■■ Linux ■■■ ■■■■■■ ■■■■ ■■■■■.

■ ■■■ ■■

1. WinSCP (■■ ■■)

- ■■■■: https://winscp.net/

- ■■: ■■■■■ Linux ■■■ ■■ ■■

2. PuTTY (SSH ■■)

- ■■■■: https://www.putty.org/

- ■■: Linux ■■■ ■■ ■■

3. PowerShell (■■■■)

- ■■■ ■■, SCP ■■■ ■■ ■■

■ ■■ ■■■ ■■

1■■: ■■ ■■

```
# PowerShell■■ ■■■■ ■■■■■ ■■ cd
C:\Users\it.support\PycharmProjects\ProgressReport # ■■■ ■■■■ ■■■ ■■ ls
deploy_internal.sh, nginx_internal.conf, requirements.txt
```

2■■: WinSCP■ ■■ ■■

WinSCP ■■:

1. Host name: 192.168.1.100 (■■ ■■ IP)

2. User name: ■■ ■■ (■: ubuntu, admin)

3. Password: ■■ ■■■■

4. Port: 22 (SSH ■■ ■■)

■■ ■■:

```
■■ ■■■■: C:\Users\it.support\PycharmProjects\ProgressReport\ ■■ ■■■■:
/tmp/ProgressReport/ ■■■ ■■■: - *.py (■■ Python ■■) - templates/ (■■) -
static/ (■■) - requirements.txt - gunicorn.conf.py - deploy_internal.sh -
nginx_internal.conf - .env
```

3■■: PuTTY■ ■■ ■■

PuTTY ■■:

1. Host Name: 192.168.1.100

2. Port: 22

3. Connection type: SSH

■■ ■■ ■ ■■:

```
# ■■■■ ■■■■■ ■■ cd /tmp/ProgressReport # ■■■■ ■■ ■■ ■■ chmod +x
deploy_internal.sh # ■■ ■■ sudo ./deploy_internal.sh 192.168.1.100
```

4■■: PowerShell ■■ (■■)

```
# SCP■ ■■ ■■ ■■ (PowerShell 7+ ■■) scp -r
C:\Users\it.support\PycharmProjects\ProgressReport\
username@192.168.1.100:/tmp/ # SSH■ ■■ ■■■■ ■■ ■■ ssh
username@192.168.1.100 "cd /tmp/ProgressReport && chmod +x deploy_internal.sh
&& sudo ./deploy_internal.sh"
```

██ ██ ██ ██ ████

IP ██ ██

██ ██ ██ IP█ ██ ██:

nginx_internal.conf ██:

```
# █████ ██ sudo nano /etc/nginx/sites-available/progressreport # server_name
██ ███ ██ server_name progressreport.company.local 192.168.1.50; # ██ ██ IP
```

███ ██ IP ██

██ ████ ███ ██ ██:

```
# 192.168.1.0/24 ███ ████ ██ allow 192.168.1.0/24; deny all; # ██ ██ ████
██ allow 192.168.1.0/24; # ███ allow 192.168.2.0/24; # ███ allow
10.0.0.0/8; # VPN deny all;
```

█ ██ █ ██

██ ██

```
# ██ ██ ██ sudo systemctl status progressreport # █ ███ ███ curl
http://localhost curl http://192.168.1.100
```

██ ████

```
# ███ ██ ██ sudo journalctl -u progressreport -f # ██ ██ ██ sudo
journalctl -u progressreport --since "1 hour ago" | grep ERROR
```

████ ██

1. WinSCP█ ███ ███ ██ ██

2. PuTTY█ ██ ██

3. ██ ██ █ ███ ███:

```
# ███ ██ ██ sudo cp /tmp/ProgressReport/app.py /var/www/progressreport/ sudo
cp /tmp/ProgressReport/templates/* /var/www/progressreport/templates/ # ███
███ sudo systemctl restart progressreport
```

█ ██ ██

██ ██ █ ██ ███ ██:
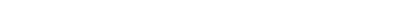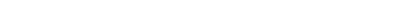
██ IP ██

- HTTP: http://192.168.1.100

- HTTPS: https://192.168.1.100

██ ███ *(DNS ██ ██)*

```
# ██ DNS ███ ██ progressreport.company.local A 192.168.1.100 # ██ ██
http://progressreport.company.local https://progressreport.company.local
```


███ *hosts ██ ██ (████)*

```
# C:\Windows\System32\drivers\etc\hosts ███ ██ 192.168.1.100
progressreport.company.local # ■ ■ ██ http://progressreport.company.local
```


■ ██ █████

SSL ███ ██

- ██ ██ ███ ████ ████ ██ ██

- █████ "██" → "████ ████ ██" ██

██ ██ ██ ██

```
# ██ ██ ██ ██ sudo journalctl --vacuum-time=30d # ██ ████ ██ sudo crontab
-e # ██ ███ ██ 2█ ██ ████ 0 2 * * 0 apt update && apt upgrade -y
```


■ ██ ██

██ ██

1. ███ ██: ██ █████ 80, 443 ██ █████

2. IP ██: ping 192.168.1.100

3. ███ ██: sudo systemctl status progressreport nginx

██ ██

```
# ██ ██ ███ sudo chown -R www-data:www-data /var/www/progressreport sudo
chmod -R 755 /var/www/progressreport
```


██ ██

```
# ██ ██ ██ sudo netstat -tlnp | grep :8000 sudo netstat -tlnp | grep :80 #
██ ███ ██ ███ sudo nano /var/www/progressreport/gunicorn.conf.py
```


██
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██ ██ ███

nginx_internal.conf

```
# ██ ███ Nginx ██ server { listen 80; listen 443 ssl; server_name
progressreport.company.local 192.168.1.100; # ██ IP█ ███ # ██ ██ SSL ███
(████) ssl_certificate /etc/nginx/ssl/progressreport.crt;
ssl_certificate_key /etc/nginx/ssl/progressreport.key; # SSL ██ ██ (██████
██) ssl_protocols TLSv1.2 TLSv1.3; ssl_prefer_server_ciphers on; # ██
██████ ██ ██ allow 192.168.0.0/16; allow 10.0.0.0/8; allow 172.16.0.0/12;
deny all; # ██ ██ ██ ██ location /static/ { alias
/var/www/progressreport/static/; expires 1h; # ██████ ██ ██ add_header
Cache-Control "public"; } # Flask ██████ ███ location / { proxy_pass
http://127.0.0.1:8000; 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; # ██
█████ ████ (█ ████) proxy_connect_timeout 60s; proxy_send_timeout 60s;
proxy_read_timeout 60s; } # ███ ██ ██ (███ ██) add_header X-Frame-Options
"SAMEORIGIN" always; add_header X-Content-Type-Options "nosniff" always; #
███ ██ ██ ██ client_max_body_size 50M; } ...
```