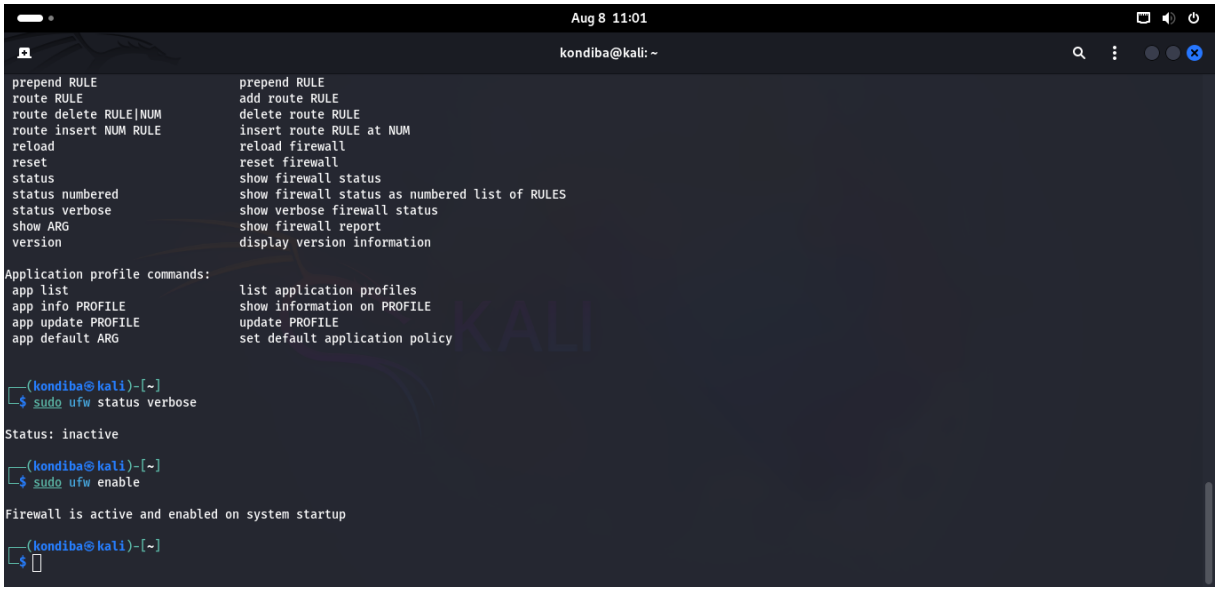
# Day 4 - Firewall Configuration and Traffic Filtering Report

## Introduction

This report documents the process of basic firewall management and network traffic filtering using UFW (Uncomplicated Firewall) on Kali Linux.
The steps cover enabling the firewall, adding and removing rules, and verifying their effects using Nmap scans.

Initial Firewall Status:
The firewall (UFW) was initially inactive, meaning no filtering rules were applied to incoming or outgoing network traffic. This could leave the system exposed to potential unauthorized access attempts.




Firewall Activation:
The UFW firewall was enabled using 'sudo ufw enable'. This action starts the firewall service and ensures it runs on system startup, applying default and user-defined rules.

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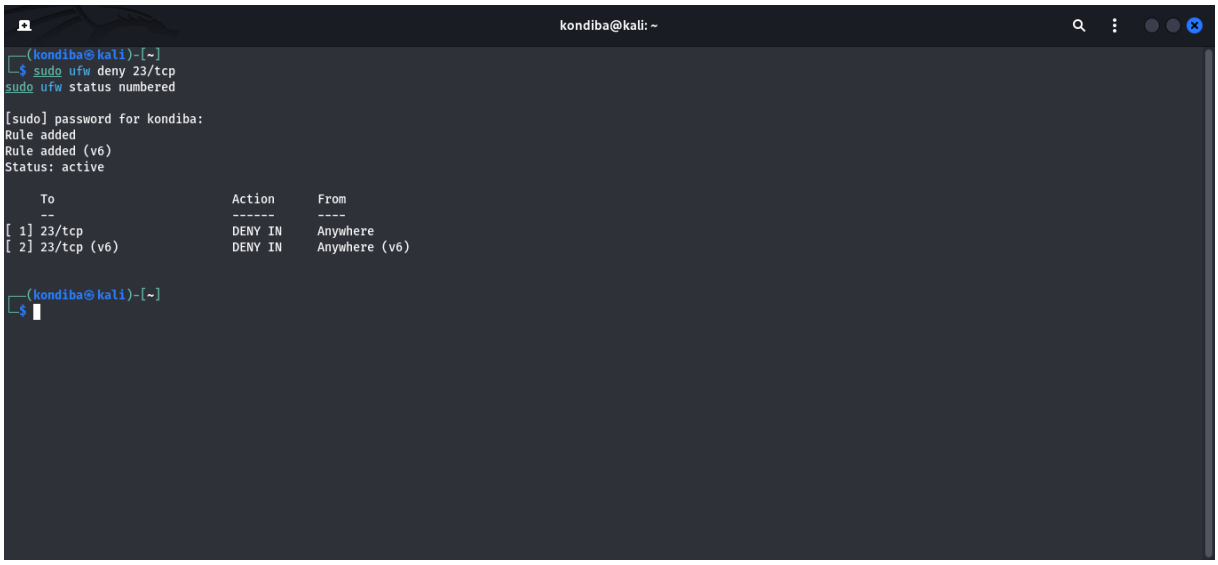
Blocking Telnet (Port 23):

A firewall rule was added to deny incoming traffic on port 23 (Telnet). Telnet is insecure as it transmits data in plaintext, including credentials, making it vulnerable to interception.




Port 23 Reachability Test:

Using Nmap, port 23 was confirmed as closed. This indicates that the firewall successfully blocked access to the Telnet service.

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```
┌──(kondiba㉿kali)-[~]
└─$ nmap -p 23 127.0.0.1

Starting Nmap 7.95 ( https://nmap.org ) at 2025-08-08 11:09 IST
Nmap scan report for localhost (127.0.0.1)
Host is up (0.00019s latency).

PORT   STATE  SERVICE
23/tcp closed telnet

Nmap done: 1 IP address (1 host up) scanned in 0.29 seconds
```

Testing SSH Port (Port 22) Before Allow Rule:

Port 22 was initially closed because no active SSH service was running. This demonstrates that port status also depends on service availability.

```
┌──(kondiba㉿kali)-[~]
└─$ nmap -p 22 127.0.0.1

Starting Nmap 7.95 ( https://nmap.org ) at 2025-08-08 11:13 IST
Nmap scan report for localhost (127.0.0.1)
Host is up (0.00011s latency).

PORT   STATE  SERVICE
22/tcp closed ssh

Nmap done: 1 IP address (1 host up) scanned in 0.14 seconds
┌──(kondiba㉿kali)-[~]
└─$
```

Allowing SSH (Port 22):

A firewall rule was added to allow incoming traffic on port 22 for SSH. This is crucial for secure remote administration of the system.

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```
┌──(kondiba㉿kali)-[~]
└─$ sudo ufw allow 22/tcp
sudo ufw status numbered

Rule added
Rule added (v6)
Status: active

     To                         Action      From
     --                         ------      ----
[ 1] 23/tcp                     DENY IN     Anywhere
[ 2] 22/tcp                     ALLOW IN    Anywhere
[ 3] 23/tcp (v6)                DENY IN     Anywhere (v6)
[ 4] 22/tcp (v6)                ALLOW IN    Anywhere (v6)

┌──(kondiba㉿kali)-[~]
└─$
```

Why Port 22 Showed Closed Initially:

Even after adding the allow rule for port 22, it remained closed until the SSH service was started. This highlights that firewall rules alone cannot open a port without an active service.

```
kondiba@kali: ~

┌──(kondiba㉿kali)-[~]
└─$ sudo systemctl start ssh
sudo systemctl enable ssh

Synchronizing state of ssh.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable ssh
Created symlink '/etc/systemd/system/sshd.service' → '/usr/lib/systemd/system/ssh.service'.
Created symlink '/etc/systemd/system/multi-user.target.wants/ssh.service' → '/usr/lib/systemd/system/ssh.service'.

┌──(kondiba㉿kali)-[~]
└─$ nmap -p 22 127.0.0.1

Starting Nmap 7.95 ( https://nmap.org ) at 2025-08-08 11:20 IST
Nmap scan report for localhost (127.0.0.1)
Host is up (0.00013s latency).

PORT   STATE SERVICE
22/tcp open  ssh

Nmap done: 1 IP address (1 host up) scanned in 0.14 seconds

┌──(kondiba㉿kali)-[~]
└─$
```

Removing Firewall Rules:

The allow rule for port 22 and the deny rule for port 23 were deleted, restoring the firewall to its default state for these ports.

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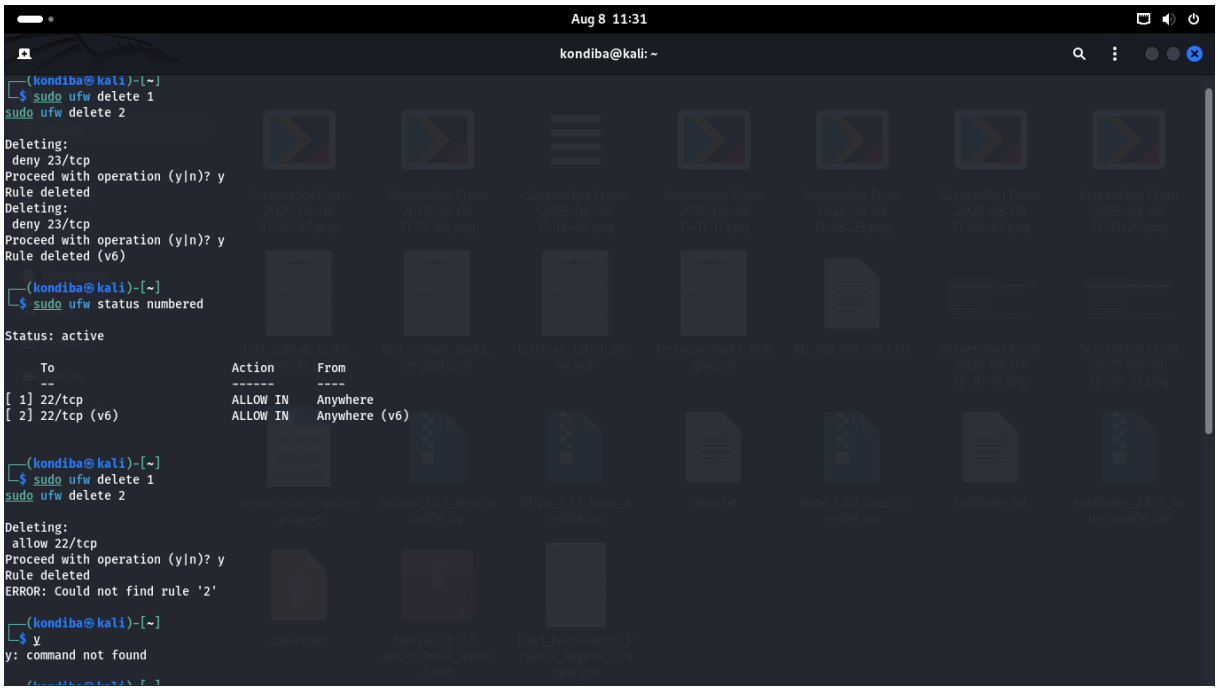


## Summary

Through this task, we learned:

1. How to check firewall status and enable it.
2. Adding rules to block insecure services like Telnet (port 23).
3. Allowing secure services like SSH (port 22) for remote access.
4. The importance of service availability in port scanning results.
5. How to remove rules to revert to the original firewall state.

Outcome: Developed basic firewall management skills and understood the role of firewalls in controlling network traffic.