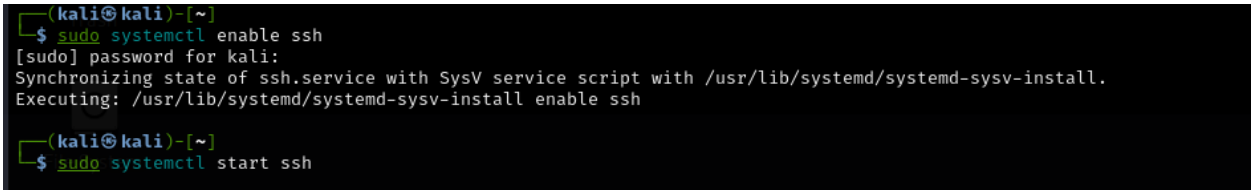
TASK2:

Remote Access & SSH Hardening:

Setup:

1. To start the process, we first activate it using `sudo systemctl enable ssh`, followed by `sudo systemctl start ssh`.



2. Next, we update the SSH configuration to allow root login and enable password authentication by modifying the `/etc/ssh/sshd_config` file.

3. Now, update the PermitRootLogin and PasswordAuthentication parameters to yes.

```
# This is the sshd server system-wide configuration file.  See
# sshd_config(5) for more information.

# This sshd was compiled with PATH=/usr/local/bin:/usr/bin:/bin:/usr/games

# The strategy used for options in the default sshd_config shipped with
# OpenSSH is to specify options with their default value where
# possible, but leave them commented.  Uncommented options override the
# default value.

Include /etc/ssh/sshd_config.d/*.conf

#Port 22
#AddressFamily any
#ListenAddress 0.0.0.0
#ListenAddress ::

#HostKey /etc/ssh/ssh_host_rsa_key
#HostKey /etc/ssh/ssh_host_ecdsa_key
#HostKey /etc/ssh/ssh_host_ed25519_key

# Ciphers and keying
#RekeyLimit default none

# Logging
#SyslogFacility AUTH
#LogLevel INFO

# Authentication:

#LoginGraceTime 2m
#PermitRootLogin prohibit-password
#StrictModes yes
#MaxAuthTries 6
#MaxSessions 10

#PubkeyAuthentication yes
```

4. We restart the SSH service.

```
┌──(kali㉿kali)-[~]
└─$ sudo systemctl restart ssh
```

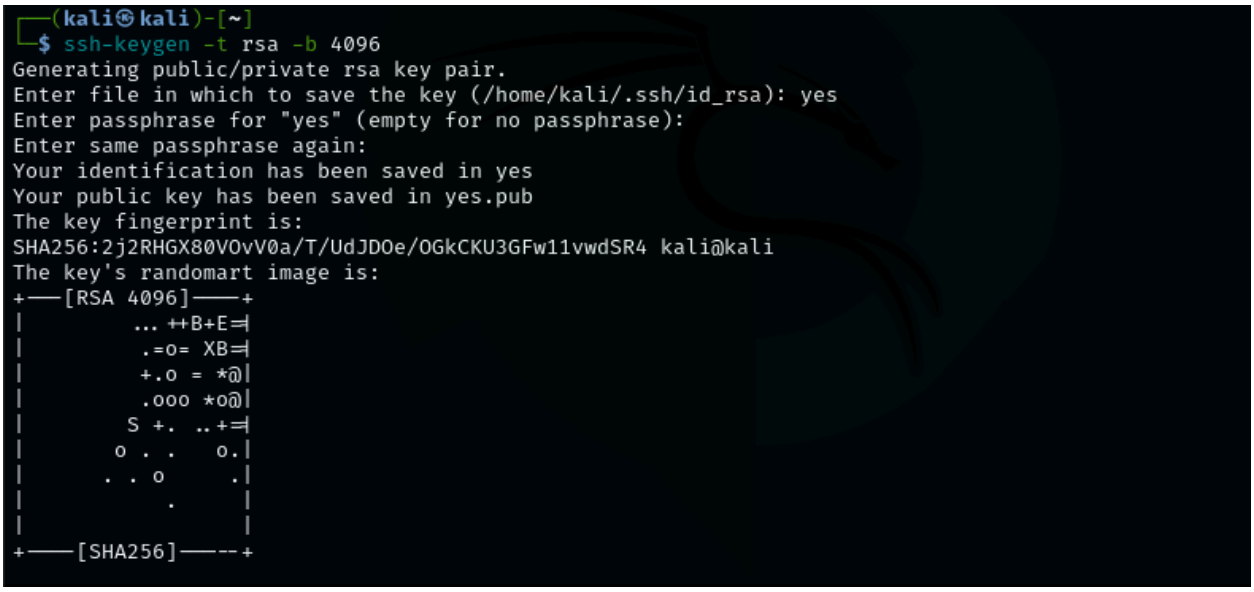
Exploition: Brute forcing SSH

1. To brute-force SSh root login `hyrda` is used.

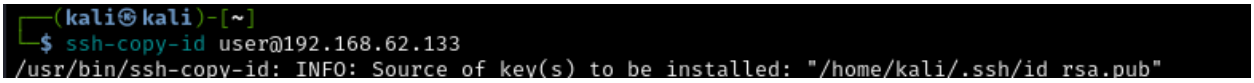
```
┌──(kali㉿kali)-[~]
└─$ hydra -l root -p kat.txt ssh://192.168.29.133
Hydra v9.5 (c) 2023 by van Hauser/THC & David Maciejak - Please do not use in military or secret service organizati
ons, or for illegal purposes (this is non-binding, these *** ignore laws and ethics anyway).

Hydra (https://github.com/vanhauser-thc/thc-hydra) starting at 2025-03-25 07:31:38
[WARNING] Many SSH configurations limit the number of parallel tasks, it is recommended to reduce the tasks: use -t
 4
```

2. Root login and authentication are disabled, this is done by setting PermitRootLogin and PasswordAuthentication no.

3. To enhance authentication security, generate an SSH key pair on the client machine using `ssh-keygen -t rsa -b 4096`.

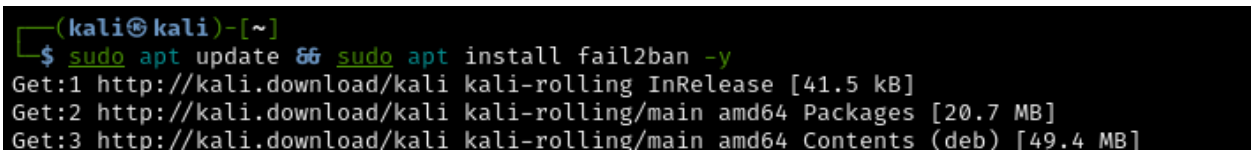


4. Next, copy the key to the server with `ssh-copy-id user@` and finally , restarting the SSH server using `sudo systemctl restart ssh`.



Configure Fail2ban to prevent attacks:

1. To improve system security, install fail2ban using `sudo apt install fail2ban -y`. It helps helps to defend against brute-force attacks by detecting and blocking 3rd party login attempts.



2. Atlast restart fail2ban to avoid SSH attacks.