Vulnerability Assessment & System Setup Report

--- Kali Linux

---by vinayak chauhan

Introduction

Kali Linux is a Debian-based Linux distribution specifically designed for penetration testing, vulnerability assessment, and digital forensics. It is widely used by cybersecurity professionals, ethical hackers, and security researchers due to its pre-installed security tools.

This report documents the procedure for downloading, installing, and verifying Kali Linux in a virtual environment using Oracle VirtualBox.

1.1 Objective of the Report

The objectives of this report are:

- To document the process of downloading Kali Linux
- To explain the virtual machine setup and installation steps
- To verify successful installation and system functionality
- To demonstrate the creation of a secure and isolated testing environment
- To present the setup in a professional VSAPT-style format

1.2 Scope of the Report

This report includes:

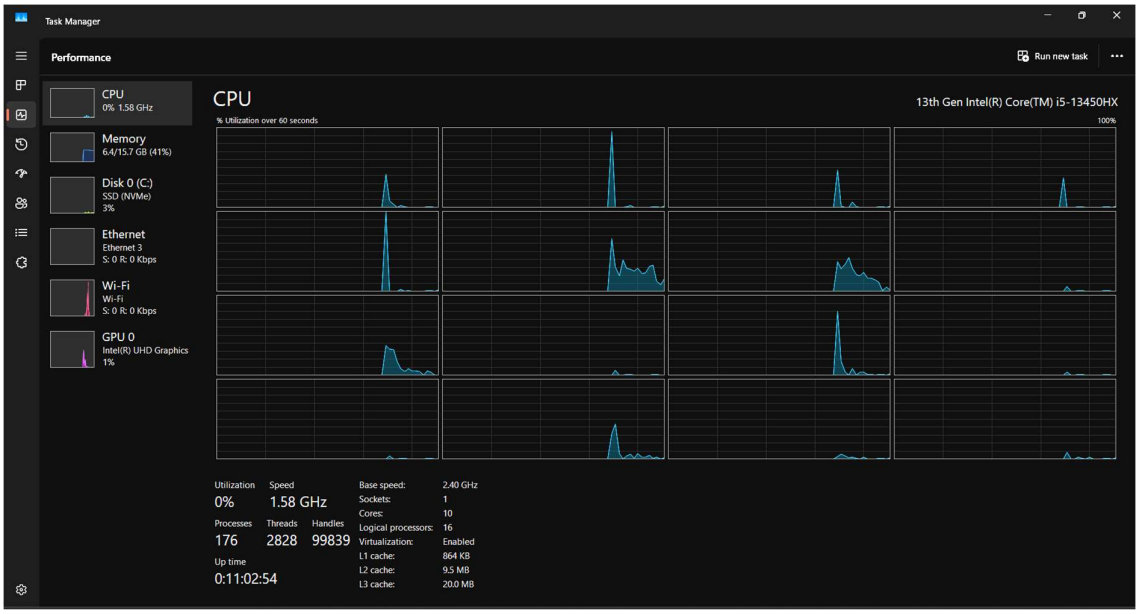
- System and software requirements
- Download procedure for VirtualBox and Kali Linux
- Installation and configuration steps
- Post-installation verification
- Observations and challenges faced
- Security considerations and best practices

System Requirements

2.1 Hardware Requirements

Minimum hardware requirements:

- Processor: Intel/AMD 64-bit processor
- RAM: Minimum 2 GB (Recommended: 4 GB)
- Storage: Minimum 30 GB free disk space
- Virtualization: Enabled in BIOS/UEFI



2.2 Software Requirements

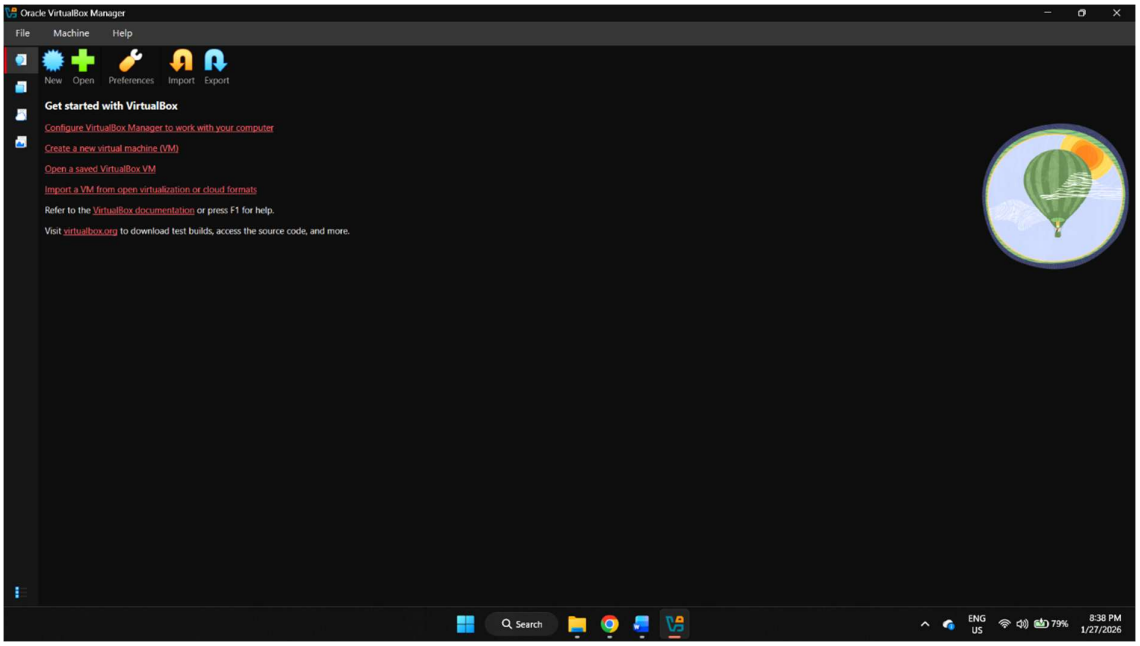
- Host Operating System: Windows 10 / Windows 11
- Virtualization Software: Oracle VirtualBox
- Guest Operating System: Kali Linux (ISO or VirtualBox Image)
- Internet Connection: Required for updates and tools

Download Procedure

3.1 Downloading Oracle VirtualBox

Steps followed:

1. Visited the official Oracle VirtualBox website
2. Selected the Windows host installer
3. Downloaded and installed VirtualBox
4. Completed installation using default settings

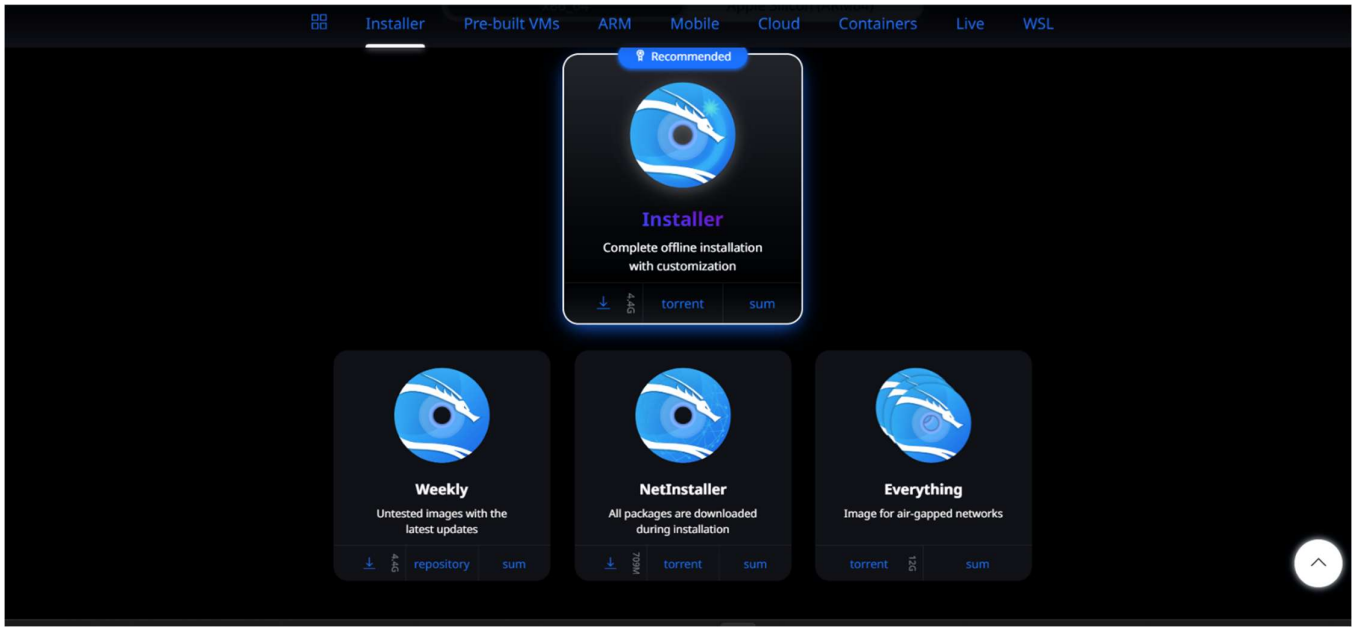


3.2 Downloading the Operating System Image

Steps followed:

1. Visited the official Kali Linux website
2. Selected **VirtualBox Image / Installer ISO**
3. Downloaded the Kali Linux image
4. Verified the file download

Source used: https://www.kali.org

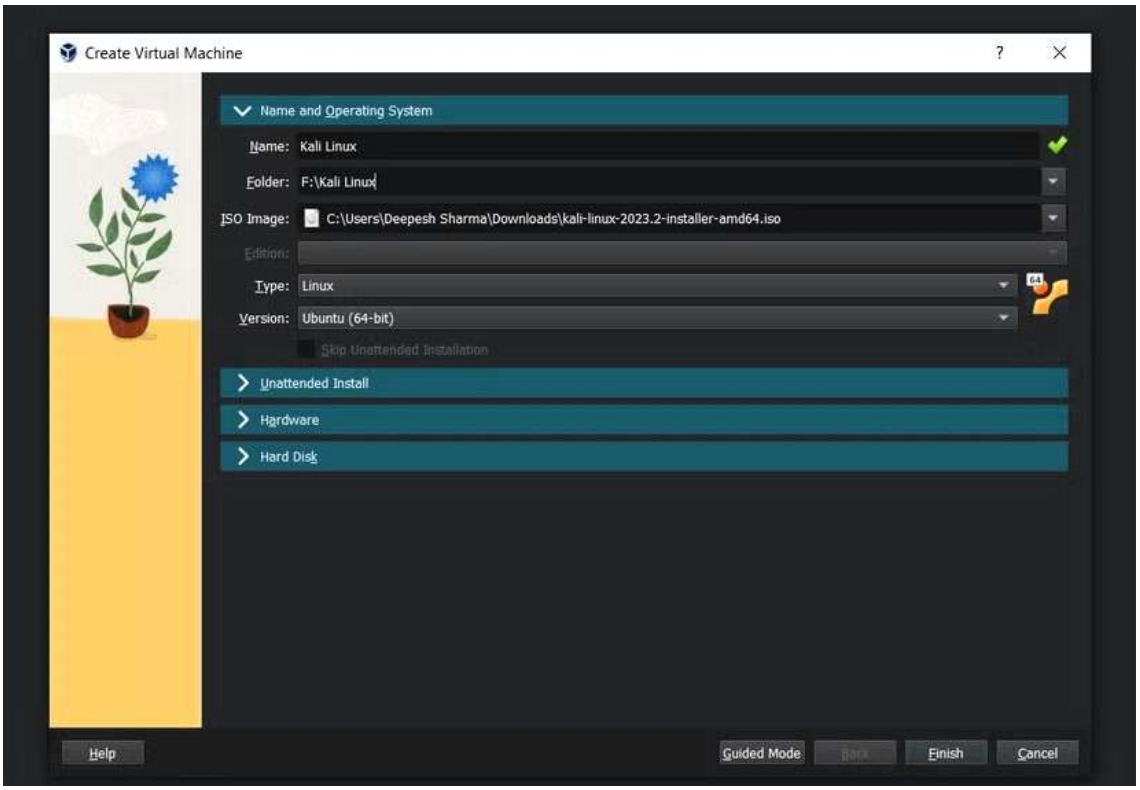


Installation and Configuration

4.1 Virtual Machine Creation

Steps followed:

1. Opened Oracle VirtualBox
2. Clicked **New** to create a virtual machine
3. Named the VM as **Kali Linux**
4. Selected Type: Linux
5. Selected Version: UBUNTU (64-bit)

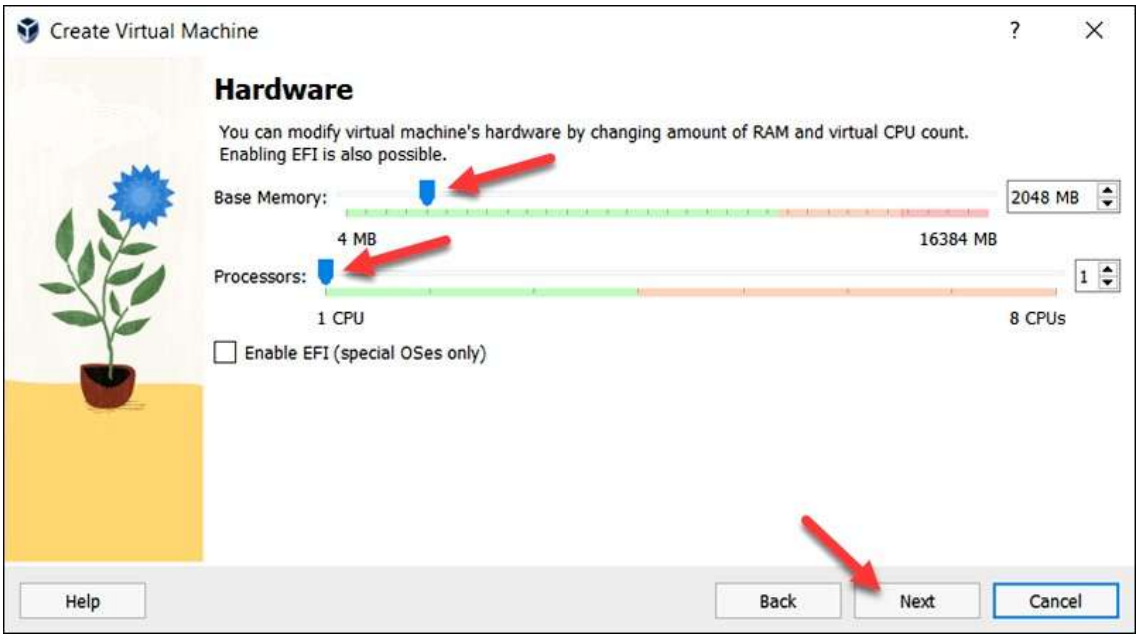


4.2 Resource Allocation (RAM, CPU, Storage)

Resources allocated:

- RAM: 4096 MB (4 GB)
- CPU Cores: 2
- Storage Type: VDI (Dynamically Allocated)
- Disk Size: 40 GB

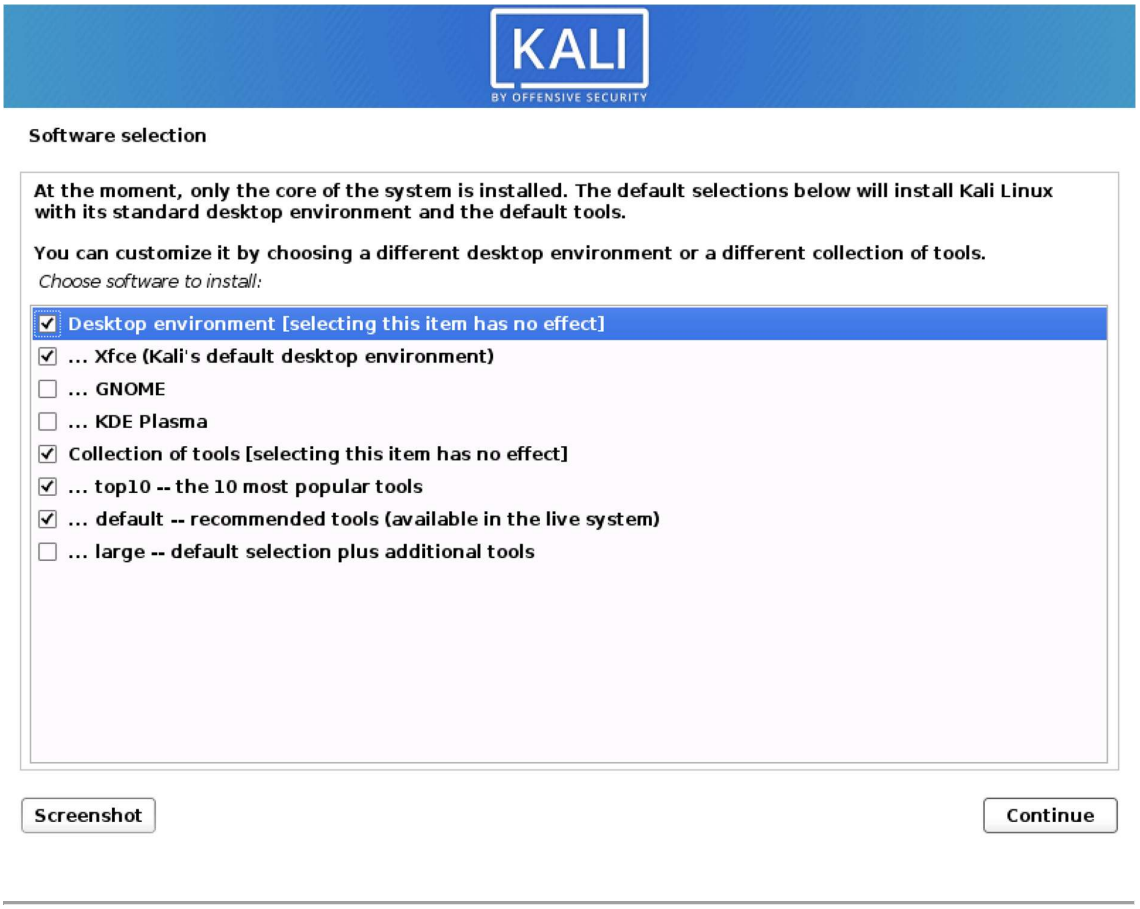
These resources ensure optimal performance for penetration testing tools.



4.3 Operating System Installation Steps

Steps followed:

1. Attached Kali Linux ISO / imported VirtualBox image
2. Started the virtual machine
3. Selected **Graphical Install**
4. Configured language, region, and keyboard
5. Set username and password
6. Installed system packages and tools
7. Completed installation and rebooted system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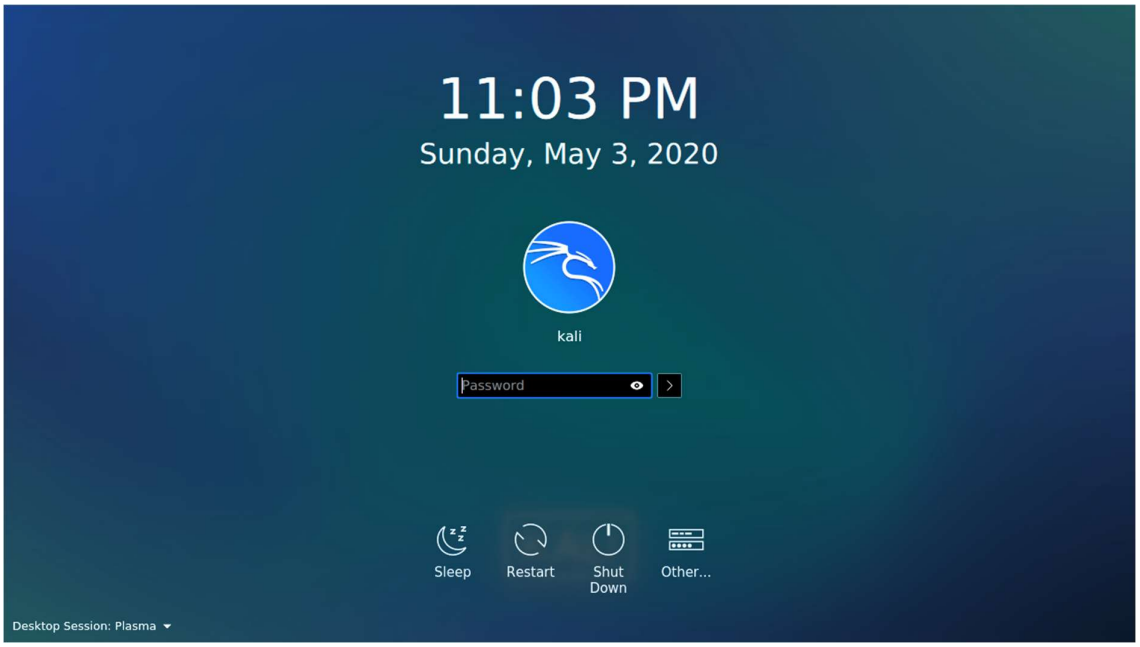
Software selection
At the moment, only the core of the system is installed. The default selections below will install Kali Linux with its standard desktop environment and the default tools.
You can customize it by choosing a different desktop environment or a different collection of tools.
Choose software to install:
Desktop environment [selecting this item has no effect]
... Xfce (Kali's default desktop environment)
... GNOME
... KDE Plasma
Collection of tools [selecting this item has no effect]
... top10 -- the 10 most popular tools
... default -- recommended tools (available in the live system)
... large -- default selection plus additional tools
Screenshot
Continue

Post-Installation Verification

5.1 Successful Boot Verification

The system booted successfully into Kali Linux without any errors.



5.2 Network Connectivity Verification

Network connectivity was verified using terminal commands.

Command used:

ping google.com

```
┌──(kali㉿kali)-[~]
└─$ ping 31.13.79.35
PING 31.13.79.35 (31.13.79.35) 56(84) bytes of data.
64 bytes from 31.13.79.35: icmp_seq=1 ttl=54 time=55.0 ms
64 bytes from 31.13.79.35: icmp_seq=2 ttl=54 time=54.3 ms
64 bytes from 31.13.79.35: icmp_seq=3 ttl=54 time=54.1 ms
^C
--- 31.13.79.35 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 54.137/54.468/55.008/0.385 ms

┌──(kali㉿kali)-[~]
└─$ ping facebook.com
PING facebook.com (31.13.79.35) 56(84) bytes of data.
64 bytes from edge-star-mini-shv-02-bom1.facebook.com (31.13.79.35): icmp_seq=1 ttl=54 time=52.4 ms
64 bytes from edge-star-mini-shv-02-bom1.facebook.com (31.13.79.35): icmp_seq=2 ttl=54 time=54.0 ms
64 bytes from edge-star-mini-shv-02-bom1.facebook.com (31.13.79.35): icmp_seq=3 ttl=54 time=52.6 ms
```

5.3 System Information Verification

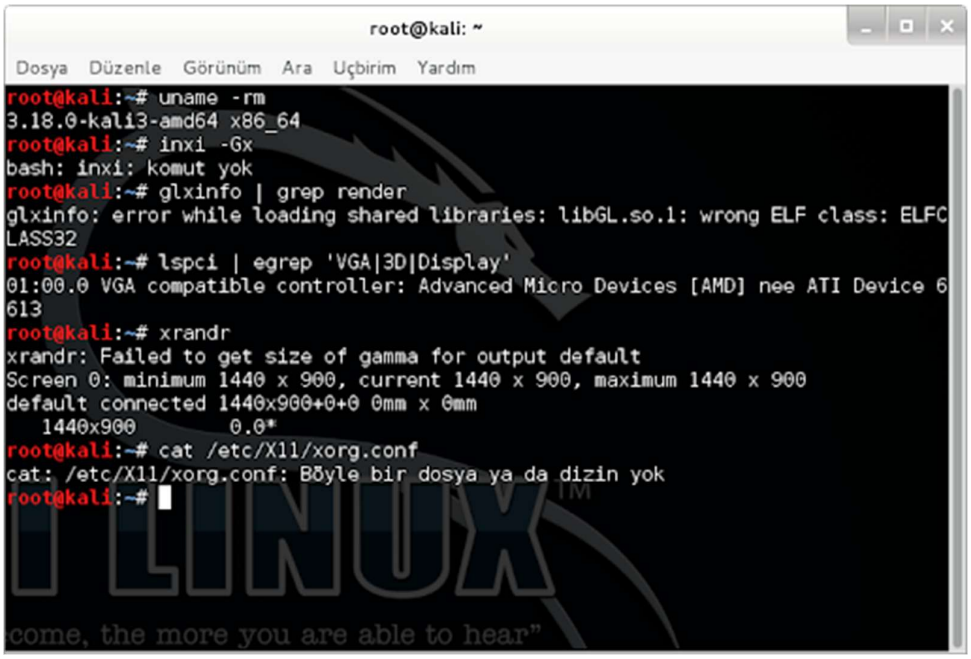
System details verified using terminal commands:

- OS Version
- Kernel Version
- Network Interface and IP Address

Commands used:

uname -a

ip a



Observations

- Kali Linux comes with pre-installed security tools
- System performance is stable in virtual environment
- Graphical interface is user-friendly
- Ideal for vulnerability assessment and penetration testing labs

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Challenges Faced and Solutions

7.1 Errors Encountered

Issue	Cause
Slow performance	Insufficient RAM
Network issues	Incorrect adapter mode
Black screen	Graphics controller issue

7.2 Troubleshooting Steps

Issue	Solution
Performance issue	Increased RAM and CPU
Network fixed	Adapter set to NAT
Display issue	Changed graphics controller to VMSVGA

Security Considerations

- Kali Linux was downloaded from official sources only
- System is used strictly for educational purposes
- Installed in an isolated virtual lab environment
- No attacks were performed on real-world systems
- Ethical and legal guidelines were followed

Conclusion

This report successfully documents the installation and configuration of Kali Linux in a virtual environment. The exercise enhanced understanding of virtualization, Linux systems, and cybersecurity tools while maintaining ethical and legal boundaries.

References

- Kali Linux Official Website – https://www.kali.org
- Oracle VirtualBox – https://www.virtualbox.org
- Kali Linux Documentation – https://www.kali.org/docs