🔬 Lab Guide: Installing Kali Linux on VirtualBox

Lab Objectives

By the end of this lab, you will be able to:

- Install **Oracle VirtualBox** on your host operating system.
- Install and configure **Kali Linux** as a virtual machine.
- Set up networking, user accounts, and update the system.

Pre-Requisites

- A host computer (Windows/macOS/Linux) with at least:
    - **4 GB RAM** (8 GB preferred).
    - **25 GB free disk space**.
    - **64-bit processor** with virtualization enabled in BIOS/UEFI.
- Internet connection.
- Admin rights on the host machine.

Part 1: Install VirtualBox

Step 1: Download VirtualBox

1. Go to VirtualBox Official Site.
2. Navigate to **Downloads**.
3. Select the installer for your host OS:
    - Windows hosts → `.exe`
    - macOS hosts → `.dmg`
    - Linux hosts → `.deb` or `.rpm`

⚠️ Ensure you download the latest version.

Step 2: Install VirtualBox

- **On Windows:**
    - Double-click the `.exe` installer.
    - Click **Next** through the setup wizard.
    - Accept default components.
    - Click **Install** → wait for installation → **Finish**.
- **On macOS:**
    - Open the `.dmg`.
    - Drag VirtualBox to the **Applications** folder.
    - Approve permissions if macOS blocks it (System Preferences → Security & Privacy).
- **On Linux:**

Install using `.deb` package (Ubuntu/Debian):

```
sudo dpkg -i virtualbox-x.x.x.deb
sudo apt -f install
```

-

Step 3: Install VirtualBox Extension Pack (Optional but Recommended)

1. From the same download page, download **Extension Pack**.
2. In VirtualBox:
    - Go to **File** → **Preferences** → **Extensions**.
    - Click **+** → select downloaded `.vbox-extpack`.
    - Accept license → Install.

This enables USB 2.0/3.0, RDP, PXE boot, webcam passthrough.

Part 2: Download Kali Linux

1. Go to Kali Linux Downloads.
2. Download **Kali Linux ISO** (64-bit installer ISO recommended).
3. Save the ISO file in a known directory (e.g., Downloads).

Part 3: Create a New VM for Kali Linux

Step 1: Start VirtualBox

- Open VirtualBox and click **New**.

Step 2: Configure Name & OS

- **Name:** Kali Linux
- **Machine Folder:** Choose default or custom location.
- **Type:** Linux
- **Version:** Debian (64-bit)

Click **Next**.

Step 3: Allocate RAM

- Allocate **2 GB (2048 MB)** minimum.
- If host has >8 GB RAM, assign **4 GB**.
  ⚠️ Don't assign more than half of your host RAM.

Step 4: Configure Virtual Hard Disk

- Select **Create a virtual hard disk now** → **Next**.
- Disk Type: **VDI (VirtualBox Disk Image)**.
- Storage: **Dynamically Allocated** (grows as needed).
- Size: **25 GB minimum** (40+ GB recommended).

Click **Create**.

Step 5: Adjust VM Settings

Select your Kali VM → Click **Settings**:

- **System → Processor:** Assign **2 CPUs** if possible.
- **Display → Video Memory:** Increase to **128 MB**.
- **Storage:** Under Controller → IDE, click **Empty**, then attach the **Kali Linux ISO** you downloaded.
- **Network:** Choose:
    - **NAT** (default, basic internet access).
    - **Bridged Adapter** (makes VM appear as another device on LAN, useful for penetration testing labs).

Part 4: Install Kali Linux

Step 1: Boot VM

- Select VM → Click **Start**.
- VM will boot into Kali Linux ISO.

Step 2: Choose Installer

- From boot menu: Select **Graphical Install**.
  (Graphical interface is user-friendly compared to text install.)

Step 3: Configure Installation

1. **Select Language** → English.
2. **Select Location** → Country/Region.
3. **Keyboard Layout** → e.g., US.

Step 4: Set Hostname & User

1. **Hostname:** `kali` (default) or choose custom.
2. **Domain name:** Leave blank if unsure.
3. **User Account:**
    - Full name: `student`
    - Username: `student`
    - Password: choose a strong password.

Step 5: Partition Disks

- Choose **Guided – use entire disk**.
- Select virtual disk.
- Choose **All files in one partition (recommended for new users)**.
- Confirm changes → **Write changes to disk** → Yes.

Step 6: Install Base System

- Wait for system to copy and install packages (may take 10–20 mins).

Step 7: Configure Package Manager

- If asked about **network mirrors**, select **Yes**.
- Leave default settings unless behind a proxy.

Step 8: Install GRUB Bootloader

- Select **Yes** to install GRUB bootloader.
- Choose `/dev/sda` (main disk).

Step 9: Finish Installation

- After installation completes, **Reboot** VM.
- Remove the ISO when prompted.

Part 5: Post-Installation

Step 1: Log In

- Default credentials (if you didn't set one):
    - Username: `kali`
    - Password: `kali`
- If you set custom credentials, use those.

Step 2: Update System

Run the following inside Kali terminal:

```
sudo apt update && sudo apt full-upgrade -y
sudo apt autoremove -y
```

Step 3: Install Guest Additions (Optional but Recommended)

This improves display resolution, clipboard sharing, drag-and-drop.

1. Start Kali VM.
2. In VirtualBox menu: **Devices** → **Insert Guest Additions CD Image**.

Inside VM, run:

```
sudo apt update
sudo apt install -y build-essential dkms linux-headers-$(uname -r)
sudo sh /media/cdrom/VBoxLinuxAdditions.run
```

3.
4. Reboot VM.

Verification

✅ Open Firefox and confirm internet works.
✅ Run `lsb_release -a` to confirm Kali Linux is installed.
✅ Resize VM window — display should auto-adjust if Guest Additions is installed.

Lab Deliverables

- Screenshot of VirtualBox main window showing Kali VM powered off.
- Screenshot of Kali Linux login screen.

Screenshot of terminal after running:

```
uname -a
```

- Screenshot after running `ifconfig` or `ip a` to show networking works.
- A paragraph summary of what you did.

Reference

- https://phoenixnap.com/kb/how-to-install-kali-linux-on-virtualbox