

Lab Setup (1 of 2)

Virtualization

OBJECTIVE

The objective of this lab is to gain hands-on experience with virtualization by installing VMware Workstation, creating a VM, and installing Kali Linux. This setup will be used for future labs to explore security tools within Kali Linux. Students will develop technical skills, document their findings, and provide detailed reports with screenshots and explanations.

GENERAL INSTRUCTIONS

- The required installation files will be provided either locally or in a designated shared location as specified by the instructors. Additional binaries are located within the **“Supplementary Materials”** directory for the course. Please refrain from downloading large files directly from the Internet.
- To complete the lab tasks, perform online research using credible sources and cite them appropriately. Additionally, make use of the resources provided in the Resources section of this lab.
- The deliverables include a comprehensive lab report that outlines the procedures followed to complete the lab tasks and encompasses the following elements:
 - **Answers** to the associated questions specified in the deliverables section at the end of this lab.
 - **Mandatory** screenshots as specified in the deliverables section at the end of this lab.
 - Ensure each screenshot is clear and captures the relevant command output.
 - Label each screenshot appropriately to match the corresponding lab task.
 - Provide detailed explanations for each configuration step and its purpose in your lab report.
 - **Uploads** of necessary files as indicated
- Ensure that your responses are substantiated with relevant screenshots.

No hypervisor other than VMware is accepted for compatibility with subsequent labs.

1. LAB TASKS:

1.1 INSTALL VMWARE WORKSTATION FOR WINDOWS

Double-click on the executable VMware-workstation-full-17.5.2-xxxxxx-Win.exe and follow the install wizard with default settings. Give it permission to install the device drivers.

Start VMware workstation using the icon on the desktop or in the start menu.

1.2 CREATE A VIRTUAL MACHINE

1. Using the new VM creation wizard of VMware workstation along with the provided Kali ISO image, create a new virtual machine with the specifications below:
 - 2 vCPUs
 - 8 GB Memory
 - HDD size 60 GB
 - partition distribution -
 - o root “/” - size of 48 GB – Filesystem type of ext4
 - o swap size of 12 GB
 - host name - Student AIU-ID
 - user-name - (first name initial, then last name)
2. Post Kali installation, issue necessary commands to update and upgrade the operating system. When done, reboot the VM and make sure that it boots and logs in normally.

1.3 INSTALL VMWARE TOOLS (GUEST TOOLS)

1. The "guest tools" are some extra software which can be installed inside the guest OS to improve keyboard and mouse integration. In addition, guest tools enable things like copy-paste and easy file transfer between host and guest.
2. Boot the VM created in the previous task. login as root user execute the below commands.

```
sudo apt update
sudo apt install -y --reinstall open-vm-tools-desktop
sudo reboot -f
```

3. Add Support for Shared Folders When Using open VM tools (OVT)

```
# Adding Support for Shared Folders When Using OVT
kali-tweaks
# In the Kali Tweaks menu, select Virtualization, then Install
# additional packages and scripts for VMware by following the
# instructions that appear on the screen.
```

4. Configure the VM to share any desired folder from the host to guest then issue the command below to mount the shared folder into the VM

```
sudo mount-shared-folders
```

5. Experiment sharing files across the guest OS and Host OS.

6. Shutdown the VM and create your first VM snapshot – name the snapshot with the same name as the guest VM postfixed with
 - **[Screenshot - 1]** Indicating the status of the VM configuration, including the hostname, in accordance with the requirements of task 1.2.
 - **[Question - 1]** What's the difference between Type-1 vs. Type-2 hypervisors?
 - **[Question - 2]** What is the version of your kali distribution? Provide a screen shot with the version indicating the guest VM name along with the currently logged on user.
 - **[Question - 3]** What is the IP address of the guest VM? Are you connected to the internet? How can you verify this? Can you Identify your gateway IP address, DNS server IP, virtual ethernet interface MAC address?
 - **[Question - 4]** What is the IP address of the host PC? Are you connected to the internet? How can you verify this? Can you Identify your gateway IP address, DNS server IP, virtual ethernet interface MAC address?
 - **[Question - 5]** In Question 4, you obtained the IP address of the VM. The default VMware network configuration is NAT. Change the network mode for the VM to be “Bridged”. Now what is the IP address of the guest VM? Are you connected to the internet? How can you verify this? Can you Identify your gateway IP address, DNS server IP, virtual ethernet interface MAC address? Corelate questions 4,5 and 6 explaining the difference between NAT and bridged modes.

DELIVERABLES

Provide a detailed lab report that meticulously outlines the procedures undertaken to complete each lab task. This report should include comprehensive step-by-step instructions, supported by the requisite **Screenshots (1)** and answers to the associated **Questions (5)**. Ensure that all responses are thoroughly substantiated with relevant evidence. Additionally, include your insights on any problems or issues encountered during the lab tasks and describe how these were resolved.

RESOURCES:

- VMware Workstation Pro 17.5.x for Personal Use, Windows platform packages
 - <https://knowledge.broadcom.com/external/article/368667/download-and-license-information-for-vmw.html>
- Kali - Installer Images
 - <https://cdimage.kali.org/kali-2024.4/kali-linux-2024.4-installer-amd64.iso>
- Step-By-Step Procedure to Install kali Linux on VMWare Workstation
 - <https://www.kali.org/docs/installation/hard-disk-install/>
 - <https://theseemaster.com/blog/install-kali-linux-on-vmware-workstation>

- Essential Linux Commands file name “101 Essential Linux Commands.pdf” in the class “Supplementary Materials” folder <https://bitl.to/3eEc>
- How to perform screenshot in windows 10:
 - <https://support.microsoft.com/en-us/windows/use-snipping-tool-to-capture-screenshots-00246869-1843-655f-f220-97299b865f6b>