

A+ Grade by NAAC: CMPN, EXTC, INFT NBA Accredited: ISO 9001:2015 Certified

Department of Information Technology

A.Y. 2025-2026
Class: BE-IT A/B, Semester: VIII
Subject: Cloud Computing Lab

Student Name: Durva Kadam

Student Roll No: 23

Experiment – 1: Hosted Virtualization

Aim: To study and implement Hosted Virtualization using Virtual Box / Hyper-V / VMWare Workstation (Open Source tool).

Objective: After performing the experiment, the students will be able to –

- understand functionalities of OS and Hypervisor
- working of Hypervisor
- made familiar with key concepts of virtualization
- types of virtualization
- understand usefulness of virtualization

Lab objective mapped : ITL802.1 : To get familiar and implement different types of virtualization techniques..

Prerequisite: Concept of Operating System, Functionalities of OS, Dual Booting.

Requirements: Oracle Virtual Box, Base OS, Guest OS iso – Ubuntu , Desktop etc.

Pre-Experiment Theory:

Host operating system (host OS).

This is the operating system of the physical computer on which VirtualBox was installed.

Guest operating system (guest OS).

This is the operating system that is running inside the virtual machine. Theoretically, VirtualBox can run any x86 operating system (DOS, Windows, OS/2, FreeBSD, OpenBSD), but to achieve near-native performance of the guest code on your machine, we had to go through a lot of optimizations that are specific to certain operating systems. So while your favorite operating system may run as a guest, we officially support and optimize for a select few (which, however, include the most common ones).

Virtual machine (VM).

This is the special environment that VirtualBox creates for your guest operating system while it is running. In other words, you run your guest operating system “in” a VM. Normally, a VM will be shown as a window on your computer’s desktop but depending on which of the various frontends of VirtualBox you use, it can be displayed in full screen mode or remotely on another computer.

Procedure

Creating Virtual machine

- a. Start *Oracle VirtualBox*
- b. Hit the *New* button on the toolbar. A wizard dialog should pop up.
- c. Write a name for your VM.
- d. Assign enough RAM to your Virtual Machine (at least 512 MB is advisable)
- e. Give enough Hard Disk space. A good minimum would be 10gb-20gb.
- f. Select the installation media.
- g. After setting the right installation media and proceeding, the Virtual Machine should start.
- h. Install ISO OS normally.
- i. Once Windows is installed, try accessing any application from the Virtual Machine.

Attach screenshots:

- Oracle virtual Box installation
- VM configuration
- VM launching successful
- Running any application inside guest OS
- Any one feature (eg. Snapshot, restoring snapshot, VM cloning etc.) of oracle virtual box

Post-Experiments Exercise

Extended Theory:

1. Discuss advantages and disadvantages of virtualization.
2. Give application for Cloning VM, Types of Clone VM (to be written in hand)

Results/Calculations/Observations:

Fill the following observation tables.

Base Machine and Guest Machine-(to be written in hand)

Sr. No		Base Machine	Guest Machine
1.	OS	Windows 11	Ubuntu Linux (Guest OS)
2.	Main memory	16 GB	2 GB
3.	Processor	Intel core i5	Virtual CPU(Intel core i5)
4.	Hard disk size	512 GB	25 GB
5.	Hard disk Type	Physical SSD	Virtual Disk Image (VDI)

Questions:

1. What is a hypervisor? List benefits of hypervisors?
2. Compare Oracle virtualbox vs vmware workstation vs KVM.

Conclusion:

1. Write what was performed in the experiment
2. Mention a few applications of what was studied.
3. Write the significance of the studied topic

References:

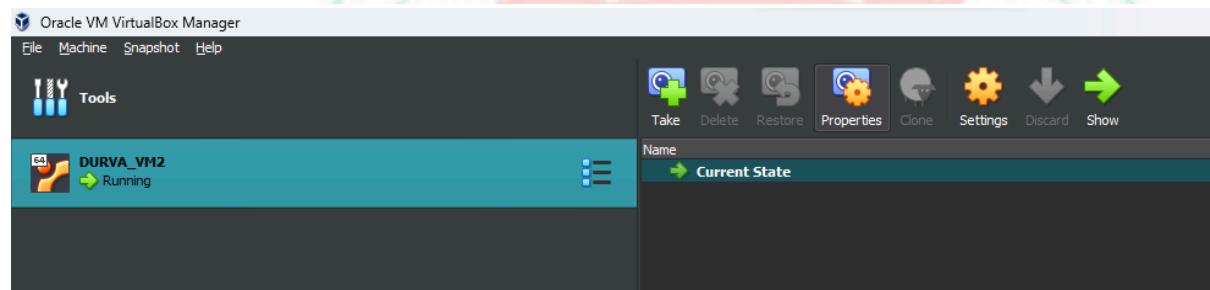
[1] [Online] <https://download.virtualbox.org/virtualbox/5.1.22/UserManual.pdf>

[2] [Online] <https://phoenixnap.com/kb/virtualbox-vs-vmware>

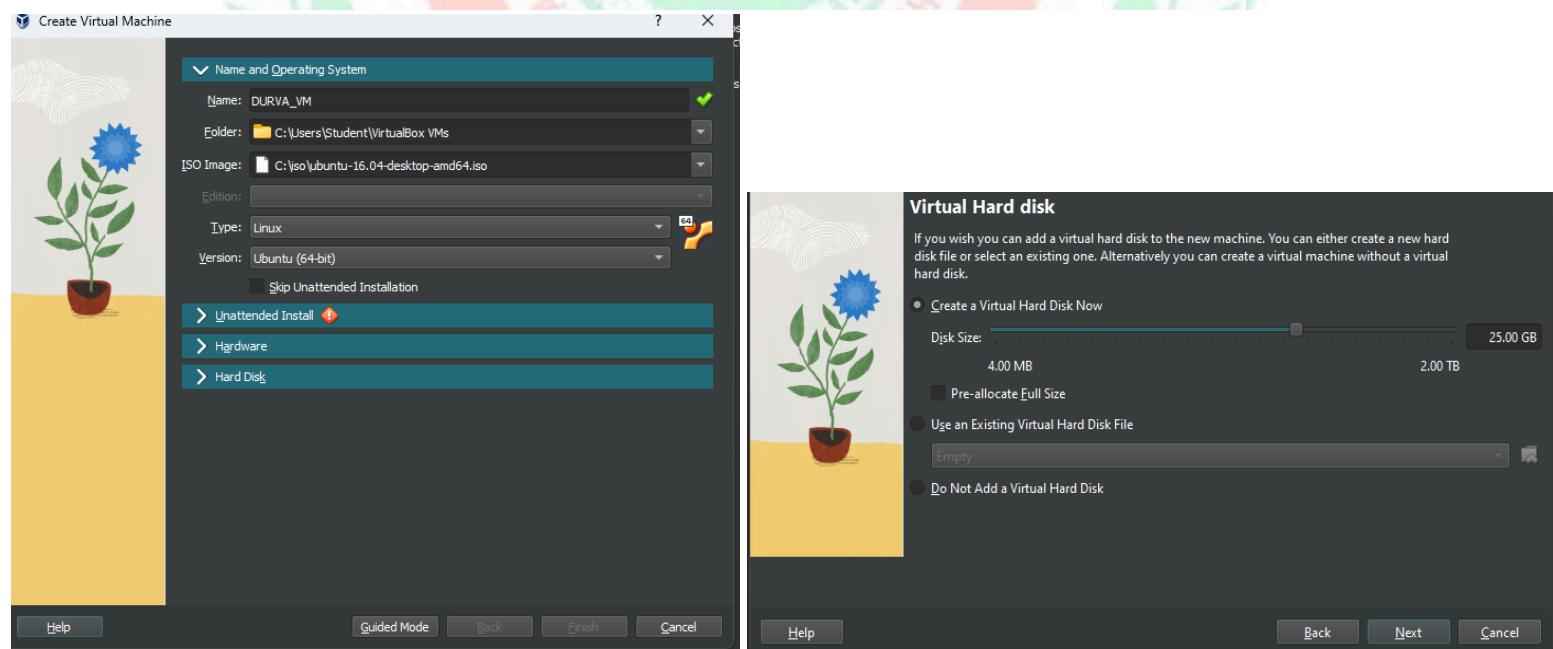
[3] Samjhana Rayamajhi, Zinnia Sultana “Comparative Performance Analysis of the Virtualization Technologies in Cloud Computing”, Volume 03, Issue 09 (September 2014), IJERT

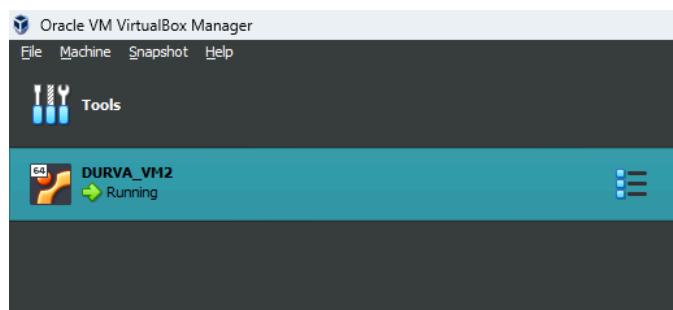
SCREENSHOTS:

Create Oracle Virtual Machine



Assigned enough RAM to the Virtual Machine (2048 MB)





Virtual machine started and Accessing LibreOffice Writer from the virtual machine

The image shows a dual-tasking view. On the left, a desktop environment's home screen is visible, featuring a sidebar with icons for various applications like Home, Desktop, Documents, Downloads, Music, Pictures, Videos, Trash, Network, Computer, and Connect to Server. The 'Home' icon is highlighted. To the right of the sidebar is a grid of folder icons labeled 'Desktop', 'Documents', 'Downloads', 'Music', 'Pictures', 'Videos', 'Templates', and 'Public'. In the center, a LibreOffice Writer window is open, titled 'Untitled 1 - LibreOffice Writer'. The window contains a blank document with the text 'Durva Kadam' typed into it. The LibreOffice toolbar is visible above the document area.