St. Francis Institute of Technology
(An Autonomous Institution)
AICTE Approved | Affiliated to University of Mumbai

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 usingVirtual 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 instllation 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(Durva_VM2)
2.	Main memory	16GB	512MB
3.	Processor	Intel(R) Core(TM) i5-10400 CPU @ 2.90GHz 2.90 GHz	Intel(R) Core(TM) i5-10400 CPU @ 2.90GHz 2.90 GHz

4.	Hard disk size	238.46GB	11.01 GB
5.	Hard disk Type	SSD	SATA

Questions:

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

Conclusion:

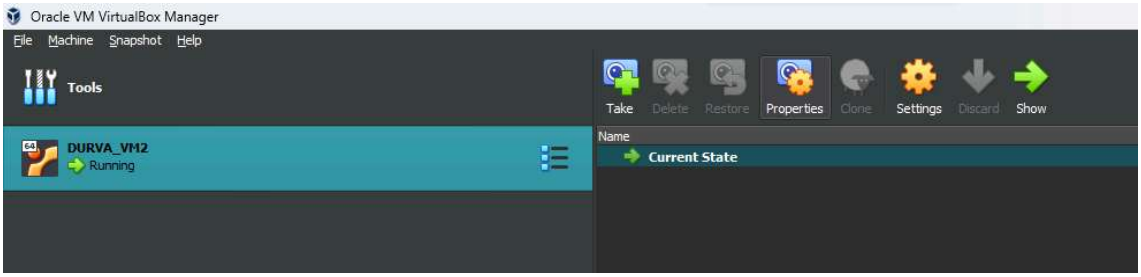
1. Write what was performed in the experiment
2. Mention a few applications of what was studied.
3. Write the significance of the studied topic

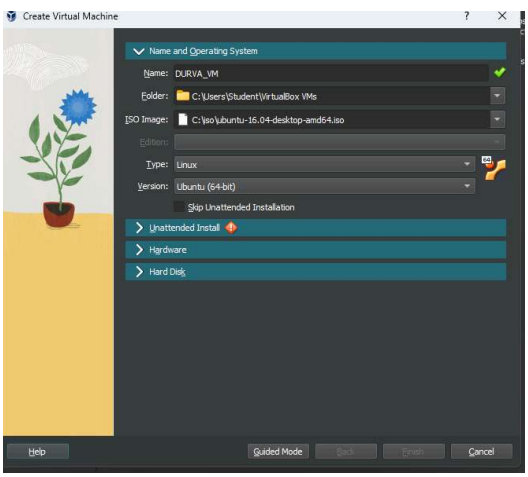
References:

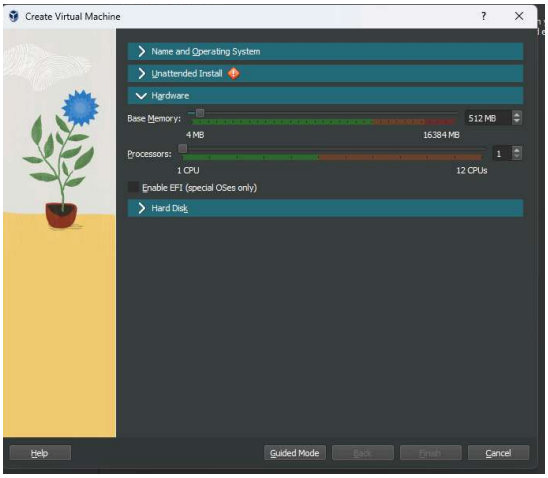
[1] [Online] https://download.virtualbox.org/virtualbox/5.1.22/UserManual.pdf

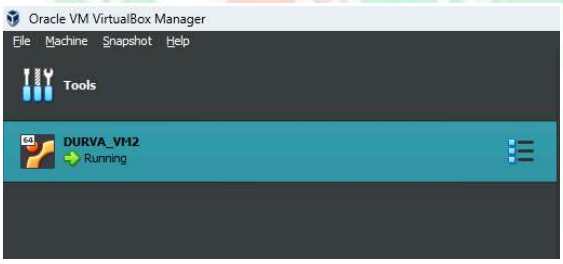
[2] [Online] https://phoenixnap.com/kb/virtualbox-vs-vmware

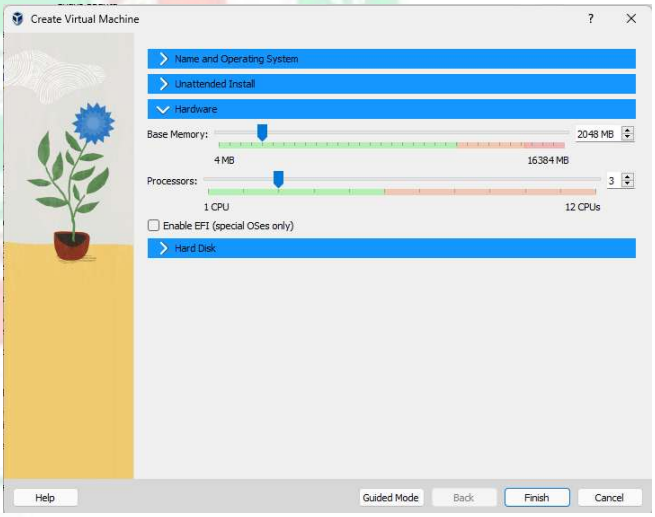
[3] Samjhana Rayamajhi, Zinnia Sultana "Comparative Performance Analysis of the Virtualization Technologies in Cloud Computing", Volume 03, Issue 09 (September 2014),IJERT

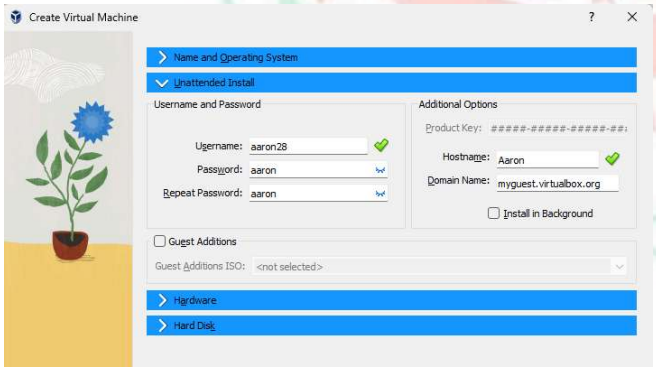

Oracle VM VirtualBox Manager
File Machine Snapshot Help
Tools
Take Delete Restore Properties Clone Settings Discard Show
DURVA_VM2
Running
Name
Current State

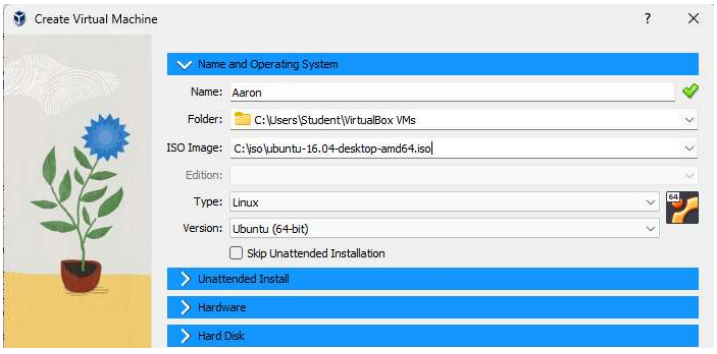

Create Virtual Machine
Name and Operating System
Name: DURVA_VM
Folder: C:\Users\Student\VirtualBox VMs
ISO Image: C:\iso\ubuntu-16.04-desktop-amd64.iso
Edition:
Type: Linux
Version: Ubuntu (64-bit)
Skip Unattended Installation
Unattended Install
Hardware
Hard Disk
Help
Guided Mode
Back
Finish
Cancel

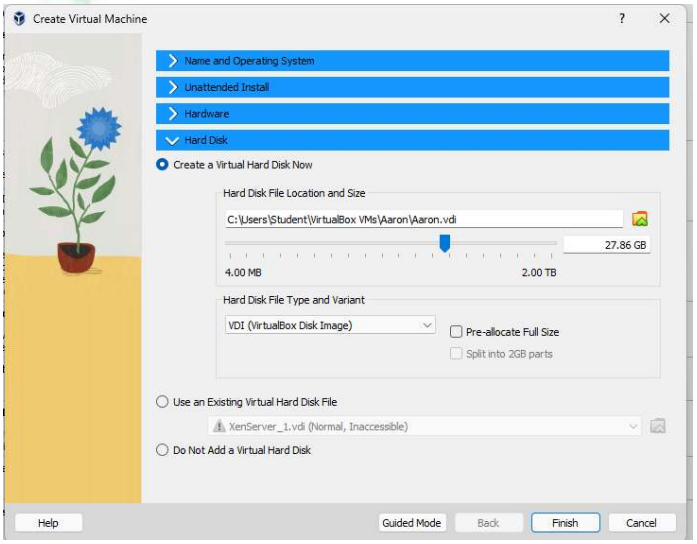

Create Virtual Machine
Name and Operating System
Unattended Install
Hardware
Base Memory: 512 MB
4 MB
16384 MB
Processors: 1
1 CPU
12 CPUs
Enable EFI (special OSes only)
Hard Disk
Help
Guided Mode
Back
Finish
Cancel


Oracle VM VirtualBox Manager
File Machine Snapshot Help
Tools
DURVA_VM2
Running


Create Virtual Machine
Name and Operating System
Unattended Install
Hardware
Base Memory: 2048 MB
4 MB
16384 MB
Processors: 3
1 CPU
12 CPUs
Enable EFI (special OSes only)
Hard Disk
Help
Guided Mode
Back
Finish
Cancel


Create Virtual Machine
Name and Operating System
Unattended Install
Username and Password
Username: aaron28
Password: aaron
Repeat Password: aaron
Additional Options
Product Key: #####-#####-#####-##
Hostname: Aaron
Domain Name: myguest.virtualbox.org
Install in Background
Guest Additions
Guest Additions ISO: <not selected>
Hardware
Hard Disk


Create Virtual Machine
Name and Operating System
Name: Aaron
Folder: C:\Users\Student\VirtualBox VMs
ISO Image: C:\iso\ubuntu-16.04-desktop-amd64.iso
Edition:
Type: Linux
Version: Ubuntu (64-bit)
Skip Unattended Installation
Unattended Install
Hardware
Hard Disk


Create Virtual Machine
Name and Operating System
Unattended Install
Hardware
Hard Disk
Create a Virtual Hard Disk Now
Hard Disk File Location and Size
C:\Users\Student\VirtualBox VMs\Aaron\Aaron.vdi
27.86 GB
4.00 MB
2.00 TB
Hard Disk File Type and Variant
VDI (VirtualBox Disk Image)
Pre-allocate Full Size
Split into 2GB parts
Use an Existing Virtual Hard Disk File
XenServer_1.vdi (Normal, Inaccessible)
Do Not Add a Virtual Hard Disk
Help
Guided Mode
Back
Finish
Cancel