

Practical Labs for the Course of CS505P

Practical Lab 1:

Title: Installing a Type 2 Hypervisor (VirtualBox)

Problem Statement:

This lab is related to the installation of a Type 2 Hypervisor, specifically Oracle VirtualBox, on a host machine running either the Windows or Linux operating system. The primary objective is to download and successfully install VirtualBox on the system, allowing for the creation and management of virtual machines.

To accomplish this task, the following steps need to be taken:

1. **Downloading Oracle VirtualBox:** The first step involves obtaining the necessary installation files for Oracle VirtualBox. This requires accessing the internet and locating a reliable source for downloading VirtualBox that is compatible with the host machine's operating system.
2. **Verifying System Requirements:** Before proceeding with the installation, it is crucial to ensure that the host machine meets the minimum system requirements specified by VirtualBox. This includes checking the hardware specifications, such as processor, memory, and available storage, as well as verifying the compatibility with the host operating system.
3. **Initiating the Installation Process:** Once the VirtualBox installation files are successfully downloaded, the user needs to execute the installer. The installation process may vary slightly depending on the operating system being used. In the case of Windows, the user will typically run the executable file (.exe) downloaded earlier. For Linux, the installation process might involve executing specific commands or using package managers.
4. **Following the Installation Wizard:** Follow the instructions carefully in the wizard which may involve accepting the software license agreement, specifying the installation location, and selecting the desired components to install.

5. Verify that VirtualBox has successfully installed on your system.

Practical Lab 2:

Title: a. Creating of Virtual Machine in Type 2 Hypervisor (VirtualBox)

b. Renaming and Deleting a Virtual Machine

Problem Statement:

This lab is related to the creation of Virtual Machine in VirtualBox Manager Interface. The primary objective of this lab is to create a single or multiple Virtual Machines through hypervisors and allocate resources to each machine from the underlying hardware.

To accomplish this task, the following steps need to be taken:

1. **Opening Interface:** The first step involves the opening of Oracle VirtualBox on your host system. Using the interface of VirtualBox Manager, look for option to create a Virtual Machine.
2. **Following the Creation Wizard:** Click the New option for creating Virtual Machine and follow the instructions carefully in the wizard which may involve the VM name, path, ISO image for VM OS, resources allocation like RAM, processor, hard disk to VM etc.
3. **Verifying Virtual Machine Creation:** Once the Virtual Machine created, then verify its name and the system resources allocated to VM by go through a system summary.
4. **Verifying Virtual Machine Function:** To check whether the created Virtual Machine works successfully or not, start the Virtual Machine properly and check its function.
5. After successful creation and testing of Virtual Machine, Rename it and finally delete it

Practical Lab 3:

Title: Installing a Guest Operating System in Virtual Machine

Problem Statement:

This lab is related to the Installation of a guest operating system in a virtual machine created by you in previous lab. It is similar to installing an operating system on a physical computer. You can install a guest operating system from an installer disc or ISO image file. It is recommended to have an ISO image file on your local disk.

To accomplish this task, the following steps need to be taken:

1. **Type of Guest OS:** Verify that if your host OS is windows, then your Guest OS image should be Linux or other OS but if your host OS is Linux, then your Guest image should be the Windows or other OS.
2. After confirmation of guest OS image, it is required to open the interface of Oracle VirtualBox on your host system and find a Virtual Machine which you have already created.
3. Locate the Virtual Machine and look for its **Settings** to install the Guest OS.
4. In the Storage option, specify the path for the Guest Image.
5. Start the Virtual Machine. The process of installation will start.
6. Follow the instructions carefully in the wizards and provide the proper information till Installation Complete wizard.

Practical Lab 4:

Title: Installing a Type 2 Hypervisor (VMware Workstation Player) and Creating a Virtual Machine

Problem Statement:

This lab is related to the installation of a Type 2 Hypervisor, specifically **VMware Workstation Player**, on a host machine running either the Windows or Linux operating system. The primary objective is to download and successfully install VMware Workstation Player on the system, allowing for the creation and management of virtual machines.

To accomplish this task, the following steps need to be taken:

6. **Downloading Oracle VMware Workstation Player:** The first step involves obtaining the necessary installation files for VMware Workstation Player. You can download the **Workstation player version for Windows or Linux** from Internet using the Search box of any Search engine.

7. **Initiating the Installation Process:** Once the **Workstation Player** installation files are successfully downloaded, the user needs to execute the installer. The installation process will start.
8. **Following the Installation Wizard:** Follow the instructions carefully in the wizard which may involve accepting the software license agreement, specifying the installation location, and selecting the desktop icon.
9. **Verify:** Open the Workstation Player and verify that it has successfully installed on your system.

Practical Lab 5:

Title: a. Creating of Virtual Machine in VMware Workstation Player

b. Renaming and Deleting a Virtual Machine

Problem Statement:

This lab is related to the creation of Virtual Machine in **VMware Workstation Player**. The primary objective of this lab is to create a Virtual Machines through Workstation player and allocate resources to the machine from the underlying hardware.

To accomplish this task, the following steps need to be taken:

6. **Opening Interface:** The first step involves the opening of **VMware Workstation Player** on your host system. Using the interface of Workstation Player, look for option to “**Create a New Virtual Machine**”.
7. **Following the Creation Wizards:** Click the **Create New Virtual Machine** option and follow the instructions carefully in the wizard which may involve the Install From, selecting Option for Guest OS, Name of Virtual Machine & path, resources allocation like RAM, hard disk to VM, processor cores etc.
8. **Verifying Virtual Machine Creation:** Once the Virtual Machine created, then verify its name and the system resources allocated to VM.

9. **Verifying Virtual Machine Function:** To check whether the created Virtual Machine works successfully or not, Make the VM ON and check its function.
10. After successful creation and testing of Virtual Machine, Rename it and finally delete it

Practical Lab 5:

Connect two Virtual Machines (VMs) and enable communication between them

Problem Statement:

You are tasked with setting up a virtual lab environment using Hyper-V to connect two virtual machines (VMs) and enable communication between them. The goal is to establish a network connection between the VMs so that they can exchange data and interact with each other.

Requirements:

Create Virtual Machines: Create two VMs using Hyper-V with the operating systems of your choice (e.g., Windows, Linux). Ensure that the VMs are configured with adequate resources to support networking and communication.

Create Virtual Switch: Set up a virtual switch in Hyper-V Manager to enable communication between the VMs. Choose between an "Internal" or "External" virtual switch based on your requirements. If you select the "Internal" option, the VMs will communicate only with each other. If you choose the "External" option, the VMs will have access to the external network as well.

Configure Network Settings: Connect the network adapters of the VMs to the virtual switch created in the previous step. Assign IP addresses to the network adapters within the same subnet to allow them to communicate with each other. For example, you can assign IP addresses such as 192.168.1.2 and 192.168.1.3 to the network adapters of the respective VMs.

Verify Communication: Start both VMs and test their communication by pinging the IP addresses assigned to their network adapters. Use the "ping" command from a command prompt within each VM to verify if they can successfully communicate with each other. Ensure that you receive valid replies, indicating a successful network connection.

Deliverables:

Provide the steps taken to set up the lab environment. Include the configuration details, IP addresses assigned to the network adapters, screenshots of relevant settings, and the results of the communication tests. The report should demonstrate the successful establishment of a network connection between the two VMs and their ability to communicate with each other.