

**St. Francis Institute of Technology**  
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**Department of Information Technology**

A.Y. 2024-2025  
Class: BE-IT A/B, Semester: VIII  
Subject: Cloud Computing Lab

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Student Roll No: 22

**Experiment – 2: Bare-metal Virtualization**

**Aim:** To study and Implement Bare-metal Virtualization using Xen (Open Source tool), HyperV or VMware Esxi.

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

- Understand functionalities of OS and Hypervisor
- Working of Hypervisor
- Getting familiar with key concepts of virtualization
- Types of virtualization
- Usefulness of virtualization

**Lab objective mapped : ITDO8024.1:** To get familiar and implement different types of virtualization techniques.

**Prerequisite:** An AWS account

**Requirements:**

- XenServer ISO

**Pre-Experiment Theory:**

1. **Hypervisor** (description-To be written in hand))
2. **Bare-metal hypervisor Architecture**-(To be drawn in hand)
3. **Xen Architecture**-(To be drawn in hand)

**Procedure** (Soft Copy form)

• **Install Xen Server**

1. Download the Citrix Hypervisor (XenServer) .iso file [Download](#)
2. Create an account to complete the download
3. Launch Virtualbox

4. Create a New VM by selecting Machine > New
  - i. Name: XenServer
  - ii. Machine Folder: C:\VMs
  - iii. Type: Linux
  - iv. Version: Other (64-bit)
  - v. Memory Size: 8192 MB
  - vi. Hard disk: Create a virtual hard disk now
5. Click Create
6. On the Create Virtual Hard Disk dialog
  - i. Name the virtual disk image XenServer.vdi
  - ii. File size: 500 GB
  - iii. Hard disk file type: VDI
  - iv. Storage on physical hard disk: Dynamically Allocated
7. Click Create
8. Select the VM and Click Settings
9. Select System > Processor
10. Give the VM at least 2 processors
11. Check the Enable Nested VT-x/AMD-V
12. Select Display
13. Slide the Video Memory to 128 MB
14. Select Network
15. Set the attached to dropdown to Bridged Adapter
16. Select Storage
17. Click on the CD-ROM drive
18. Select the disc dropdown to the right > Choose a virtual optical disc file...
19. Browse to and select the downloaded Citrix Hypervisor (XenServer) .iso file
20. Click OK
21. Select the hard disk dropdown to the right
22. Click the Create button at the top
23. Change the size to 500 GB > Click Create
24. Click OK to accept the settings
25. Make sure the XenServer VM is selected and click Start > Normal
26. Select a keyboard mapping > Ok
27. Select Ok to begin the installation
28. Select Accept EULA
29. Press Spacebar to select the 500GB VBOX HARDDISK
30. Arrow down and check the Enable thin provisioning box
31. Select Ok
32. Select Local Media > Ok
33. Enter and confirm a root password
34. Configure the network > Ok
35. Specify a hostname > Ok
36. Set the time zone > Ok
37. Select Using NTP > Ok

38. Select Ok at the NTP server setup
39. Select Install Citrix Hypervisor
40. Select No at the supplemental packs installation screen
41. After the installation completes, select Devices > Optical Drives > Remove disk from virtual drive
42. Select Ok to reboot
43. Welcome to Citrix Hypervisor (XenServer) inside VirtualBox

#### ● Installing Citrix XenCenter

1. Go back to the download page and download XenCenter [Download](#)
2. Install the downloaded .msi
3. Launch Citrix XenCenter
4. Click the Add a Server option in the main window
5. Enter the IP address and root password to the Citrix Hypervisor VM

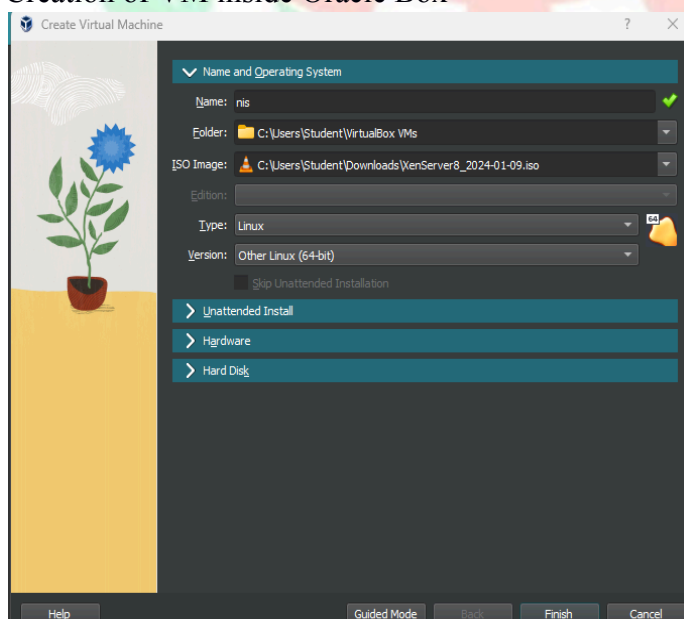
#### ● To connect XenCenter to the Citrix Hypervisor server:

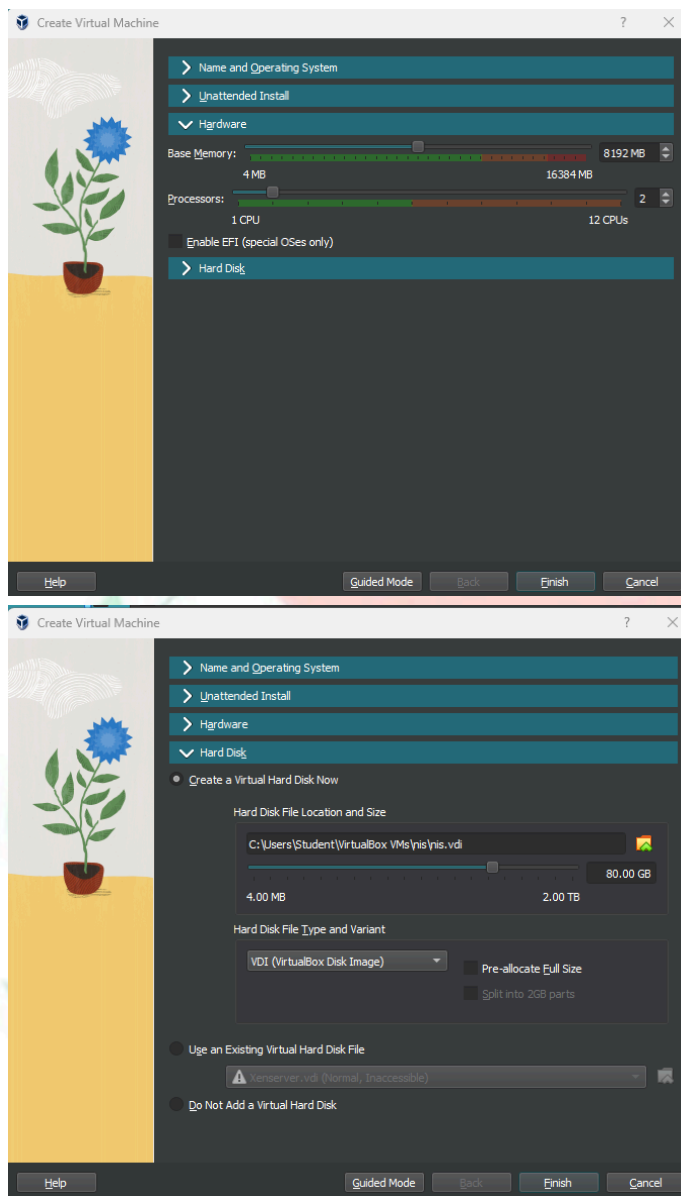
- a. Launch XenCenter. The program opens to the Home tab.
- b. Click the Add New Server icon.
- c. Enter the IP address of the Citrix Hypervisor server in the Server field. Type the root user name and password that you set during Citrix Hypervisor installation. Click Add.
- d. The first time you add a host, the Save and Restore Connection State dialog box appears.
- e. This dialog enables to set preferences for storing host connection information and automatically restoring host connections.

### Post-Experiments Exercise

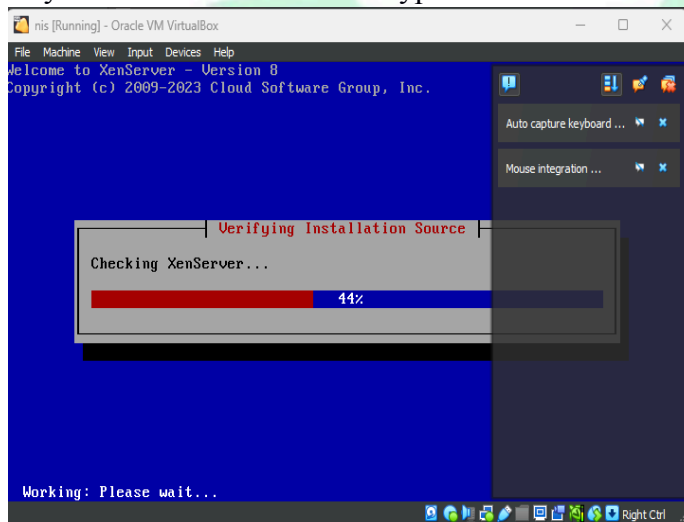
Attach Following Screenshots-

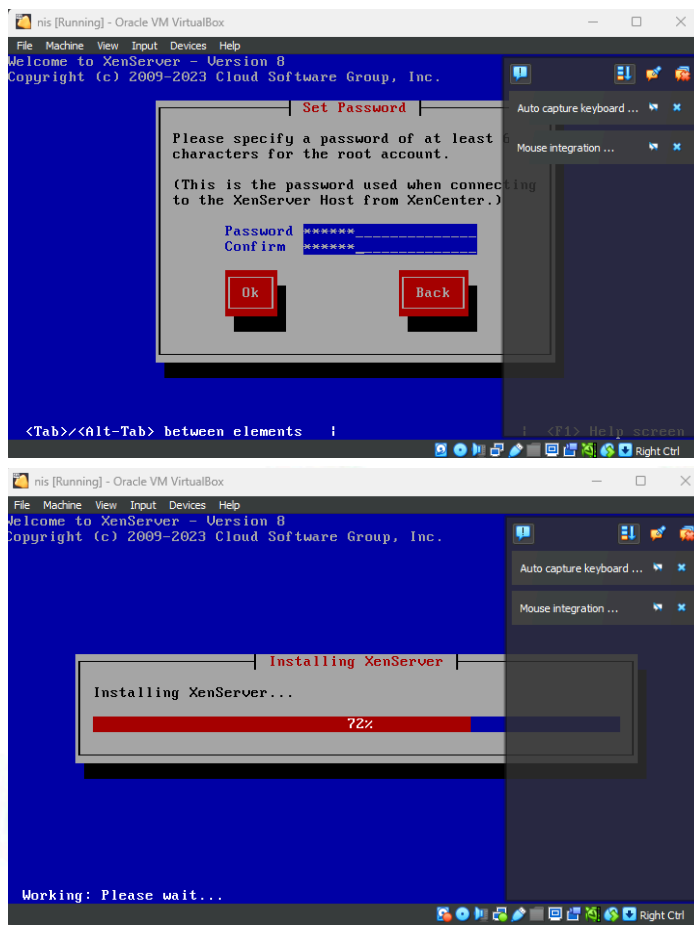
1. Creation of VM inside Oracle Box



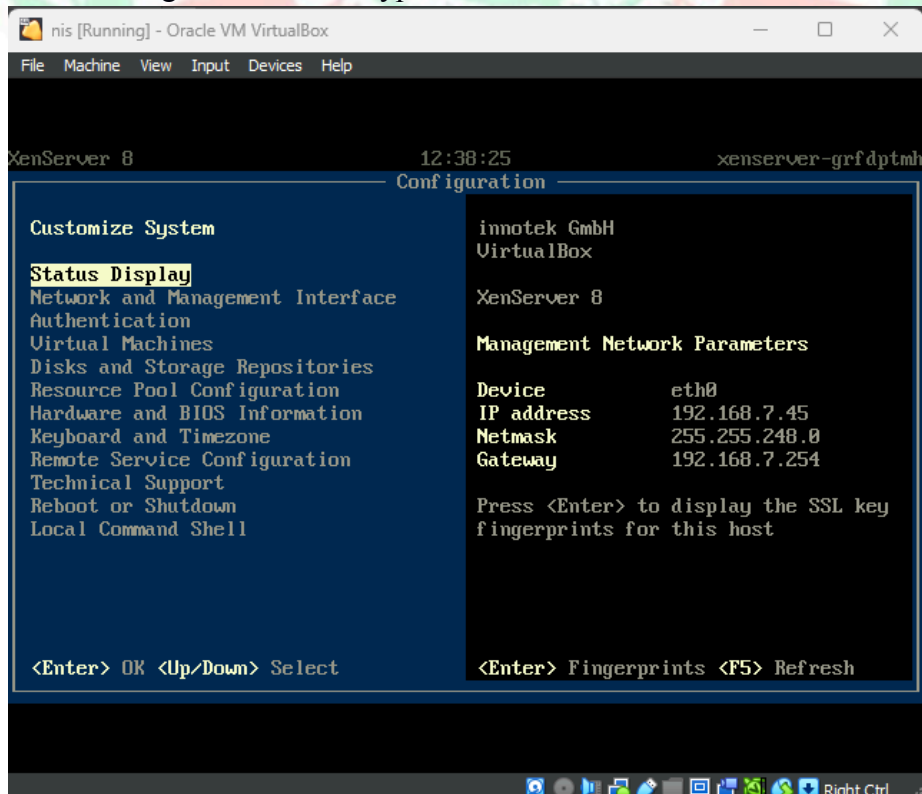


## 2. Any two screen shots of Xen hypervisor installation



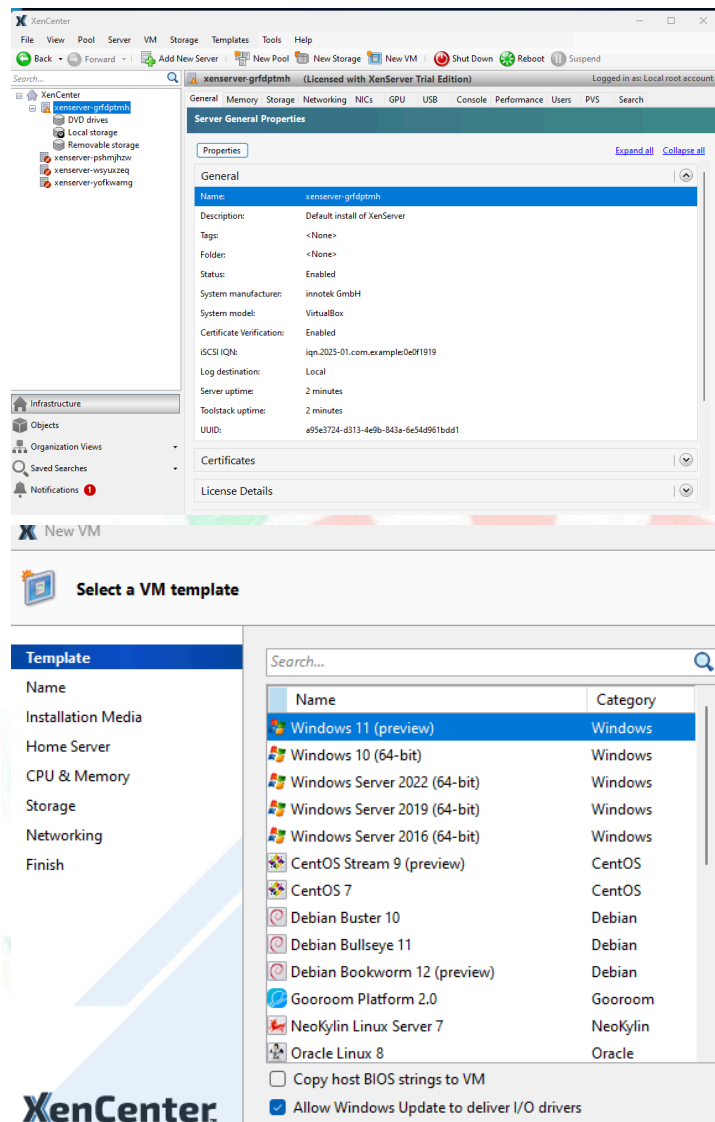


### 3. final working screen of xen hypervisor





#### 4. Enter the IP address and root password to the Citrix Hypervisor VM from xen center



#### Extended Theory:

1. Difference between bare-metal and hosted hypervisors?(to be written in hand)
2. Bare-metal hypervisor use cases(to be written in hand)
3. Benefits and drawbacks of bare-metal hypervisors(soft copy)
4. Top bare-metal hypervisor vendors and products(soft copy)

#### 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]Linux foundation: "Xen tools". Information available at: [http://wiki.xen.org/wiki/Xen\\_tools](http://wiki.xen.org/wiki/Xen_tools)  
Last review: 16-03-2014: 13.51
- [2] Bill HILL "Intro to Virtualization: Hardware, Software, Memory, Storage, Data and Network VirtualizationDefined". Information available at: <http://www.petri.co.il/intro-tovirtualization.htm>  
Last review: 16-03-2014: 12.55
- [3] [Online]<https://docs.citrix.com/en-us/citrix-hypervisor/install.html>