LESSON 1: INTRODUCTION TO SERVER VIRTUALIZATION

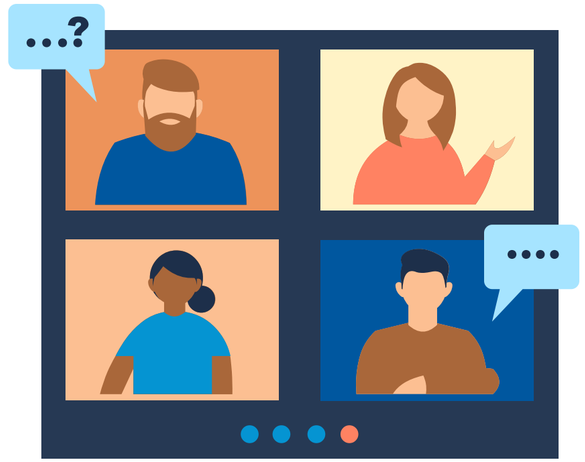
IT 213 : System Administration and Maintenance

Prepared by: Mr. Dave Macalinao | Instructor I

Introduction to Server Virtualization

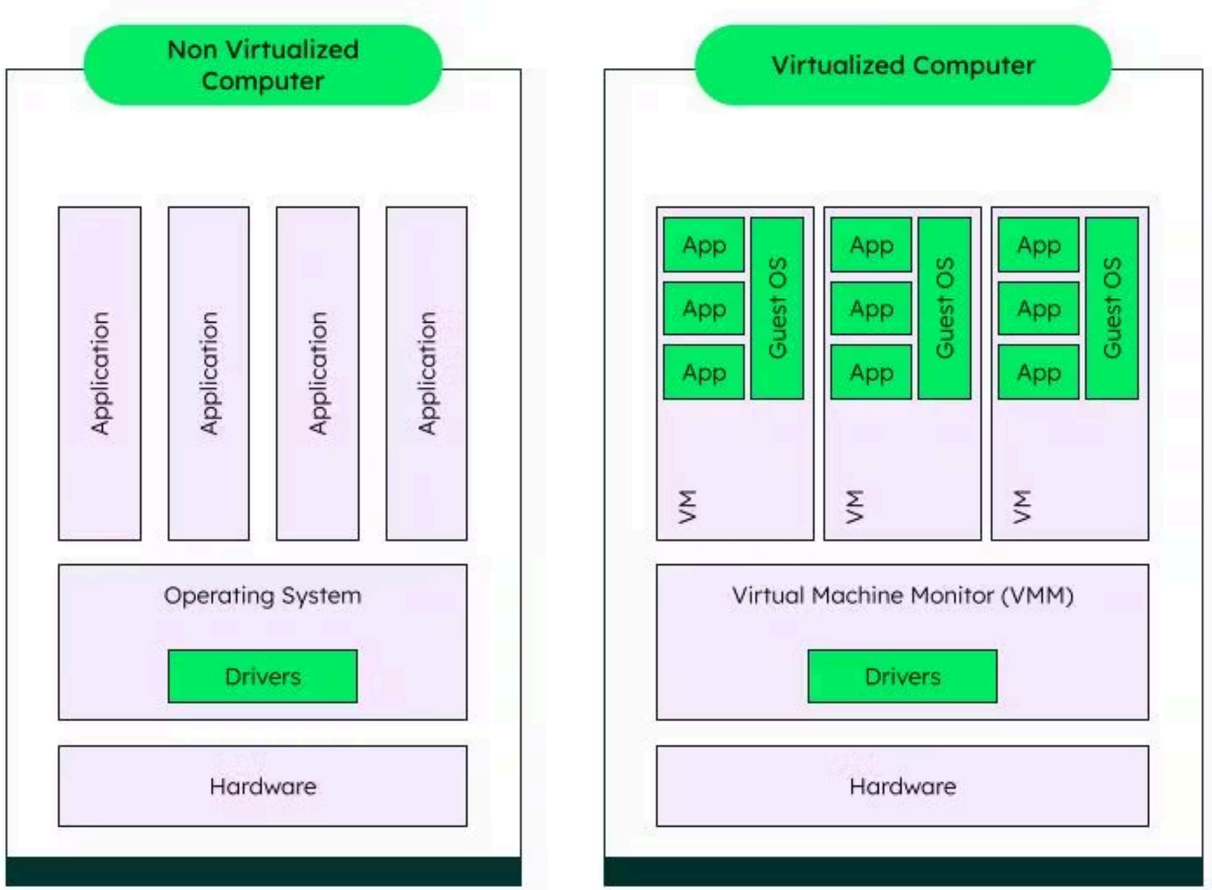
- Learning Objectives:

What is Virtualization?



- Virtualization is a process that allows for more efficient use of physical computer hardware and is the **foundation of cloud computing.**

What do you observe?



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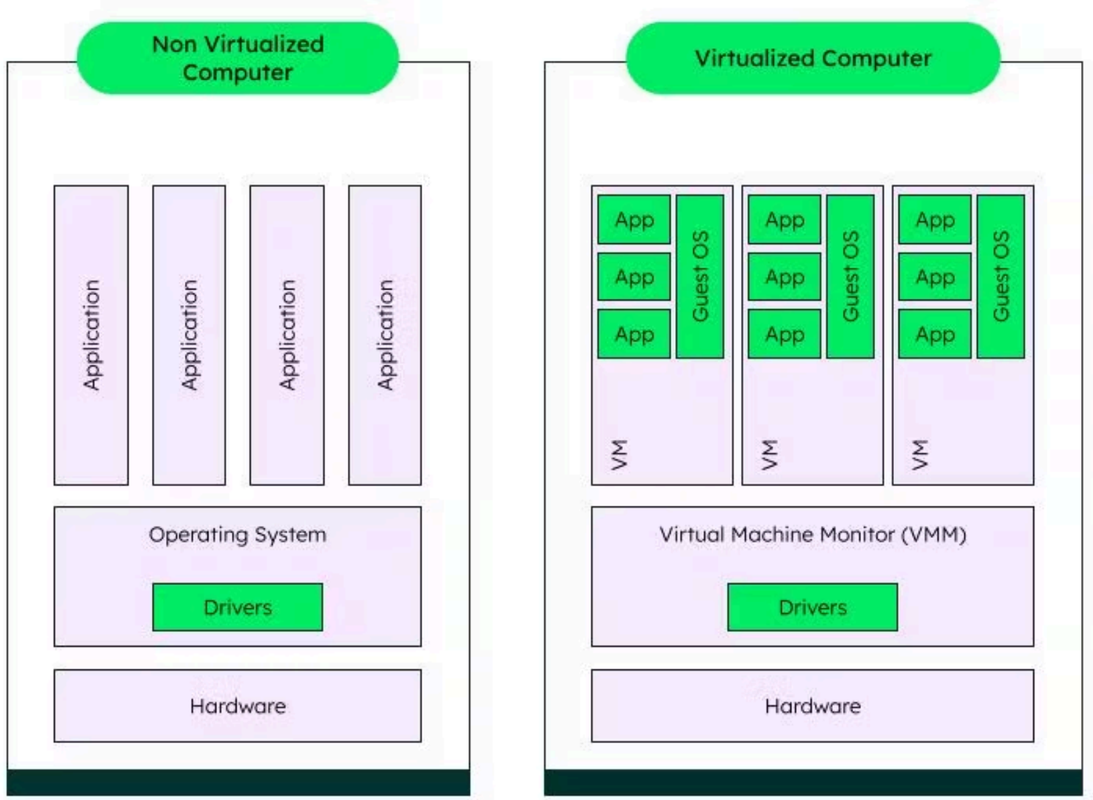
What is Virtualization?

- Virtualization uses software to **create an abstraction layer** over computer hardware, enabling the division of a single computer's hardware components into multiple virtual machines (VMs).
- Each VM runs its own operating system (OS) and **behaves like an independent computer**, even though it is running on just a portion of the actual underlying computer hardware.



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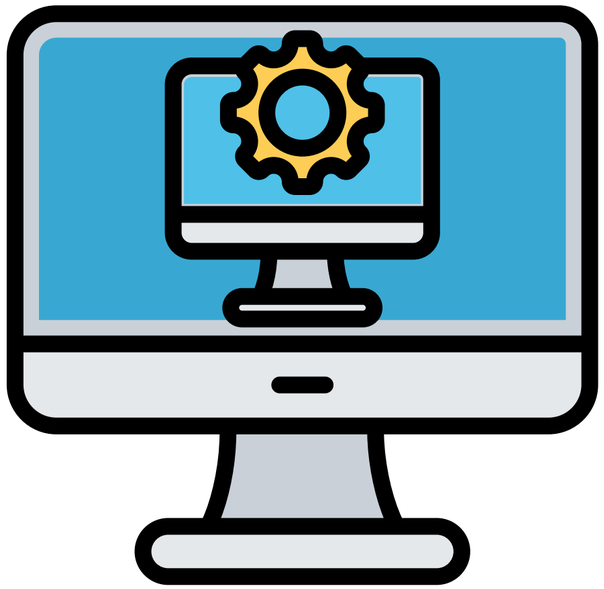
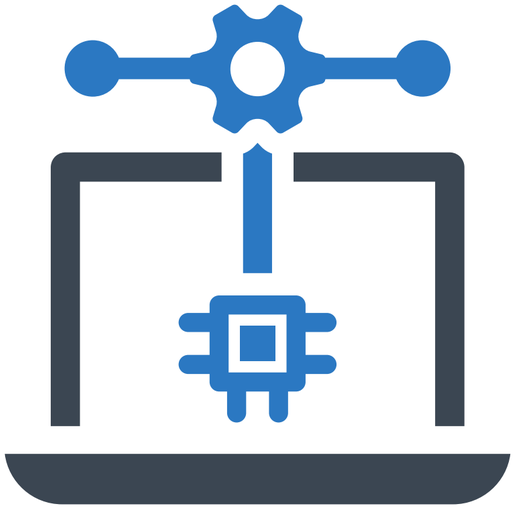
The Virtual Machine



- Virtual machines are **virtual environments** that simulate a physical computer in software form.
- It comprise several files containing the VM’s configuration, the storage for the virtual hard drive, and some snapshots of the VM that preserve its state at a particular point in time.

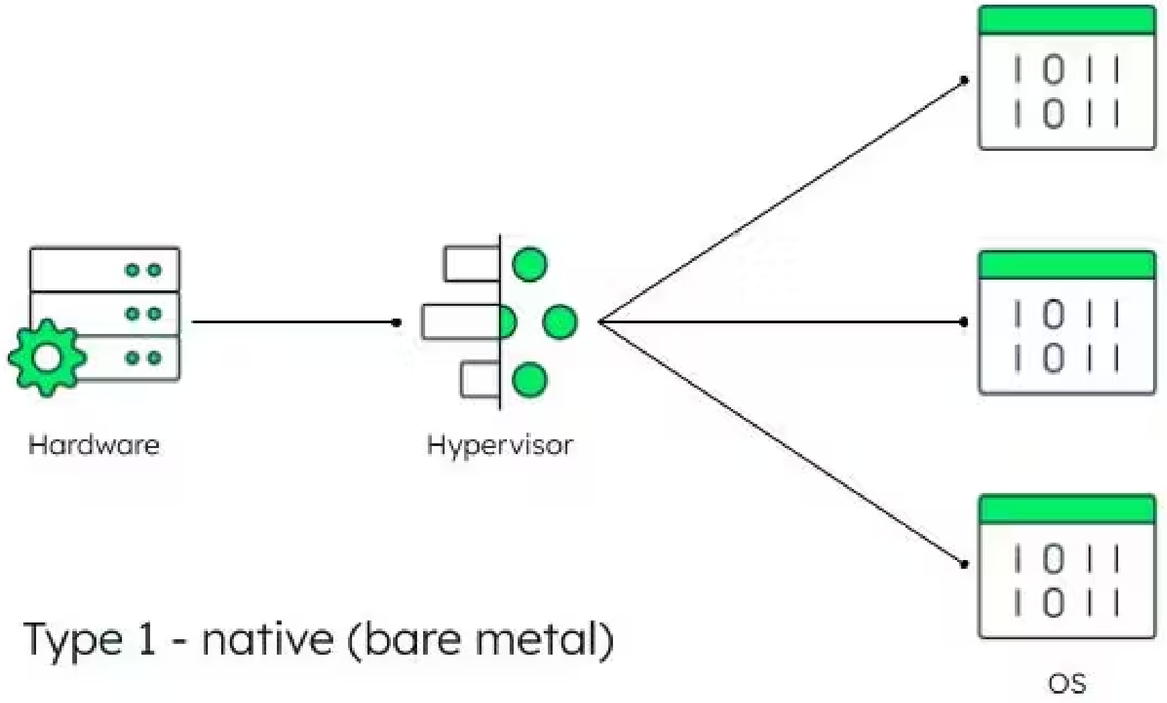
Hypervisor



Hypervisor software, working in conjunction with VMM software, acts as the interface between virtual resources and the underlying physical hardware.

Two types of Hypervisor

Type 1 Hypervisor or bare-metal hypervisors.



It runs directly on the physical machine and have access to all of the physical computer's resources. Bare-metal hypervisors are very efficient and are often used in **server virtualization, desktop virtualization, and app virtual environment creation.**

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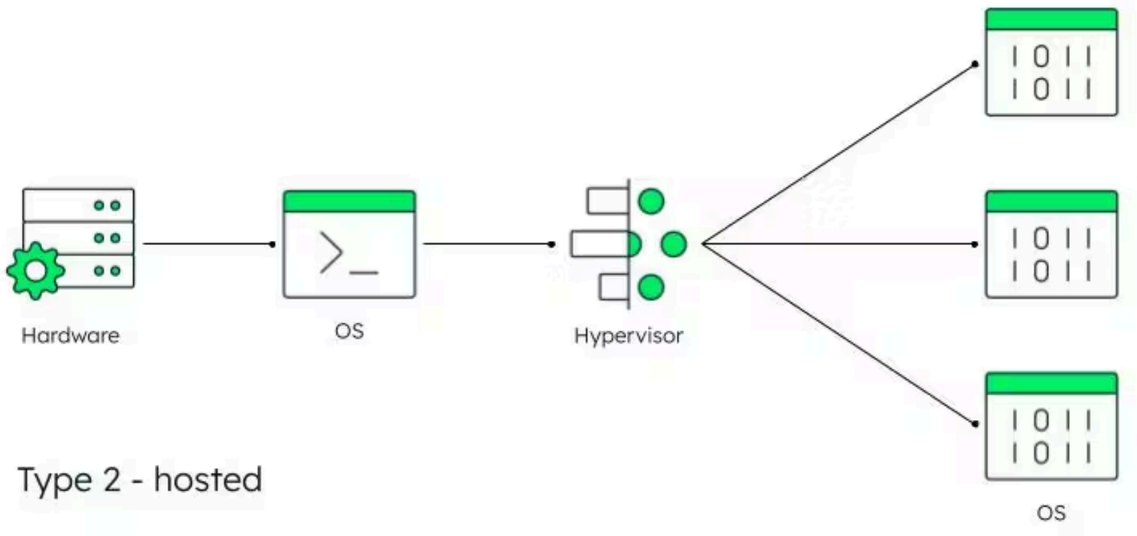
Two types of Hypervisor

Type 2 Hypervisor or hosted hypervisors.



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They are i**nstalled on a host machine that already has its own operating system (OS) running.** This pre-existing OS is in charge of resource allocation, and the hosted hypervisor will only focus on the environment created for a specific function or task. For example, hosted hypervisors are often used to create virtual environments where developers can build and test applications.

Types of Virtualization

Desktop Virtualization

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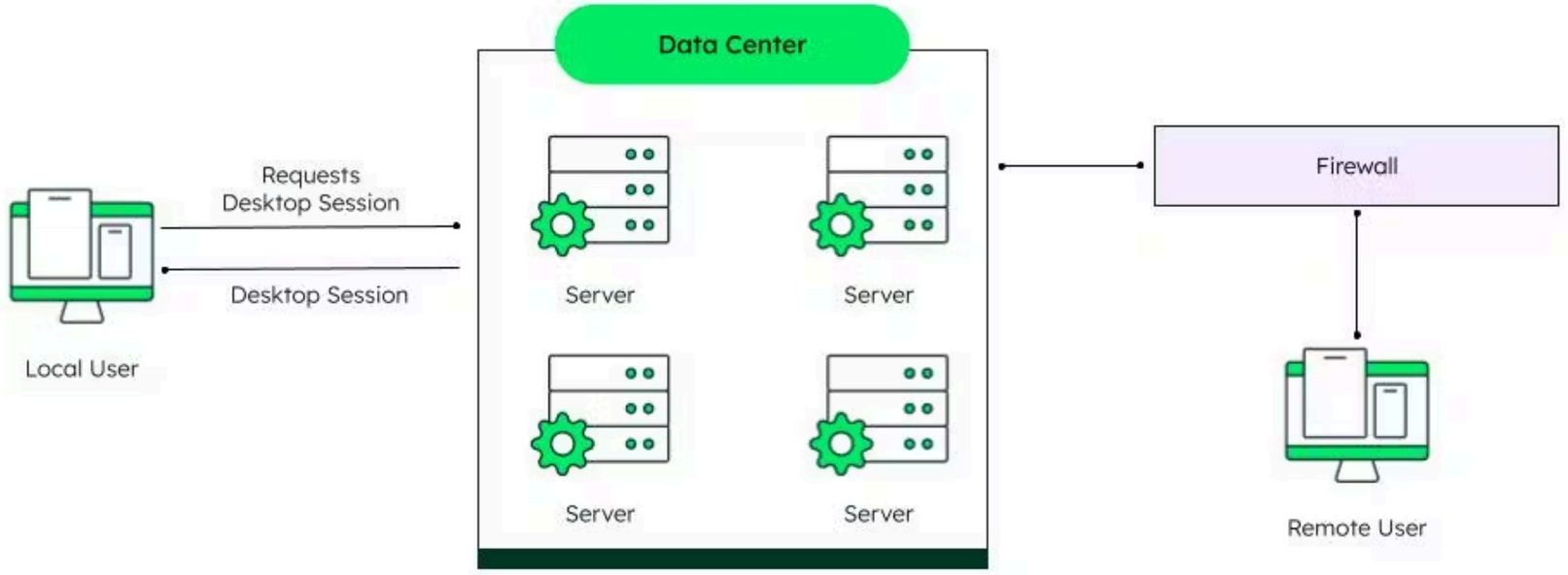

Desktop virtualization enables multiple desktop operating systems — each in its own virtual machine on the same computer.

Types of Virtualization

Hardware Virtualization

Hardware virtualization enables physical hardware to be treated as separate virtual devices that can be accessed over a network. One example includes CPU virtualization, which makes hypervisors, virtual machines, and guest operating systems possible. It allows a single CPU to be divided into multiple virtual CPUs for use by multiple virtual machines.

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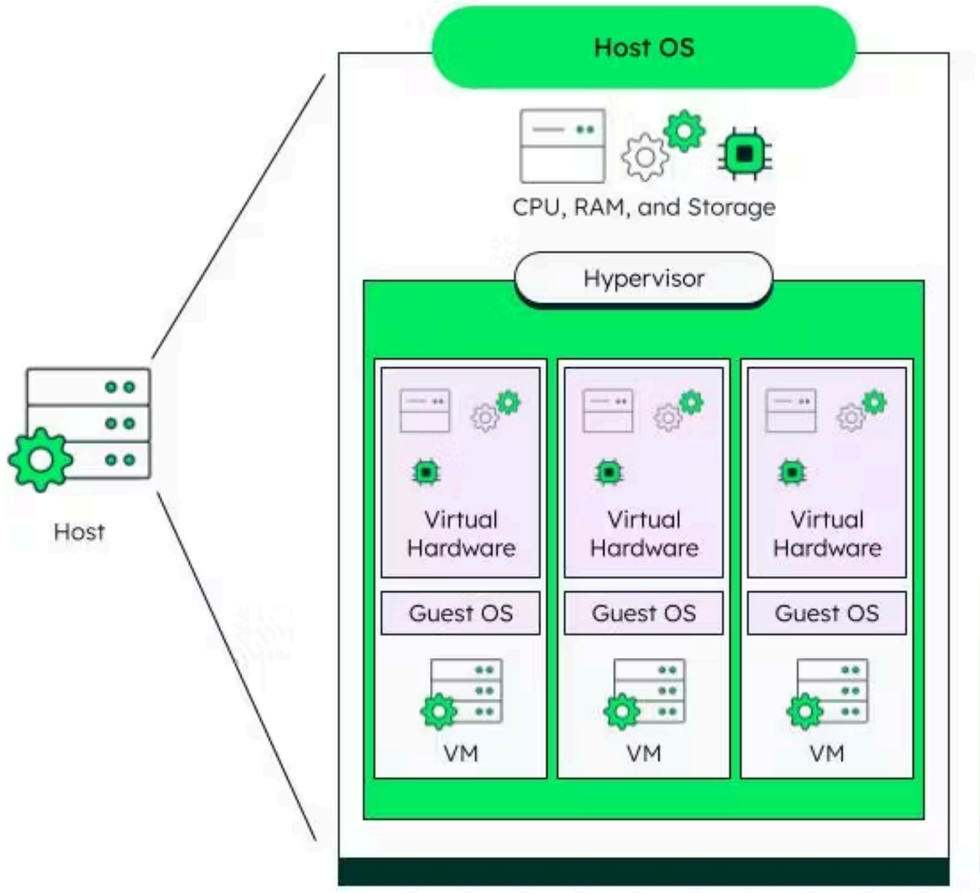

Types of Virtualization

Storage Virtualization

Disk space can be split up into smaller pieces dedicated to a virtual machine. In the same vein, a server can also combine virtual storage spaces to create much larger virtual disks.

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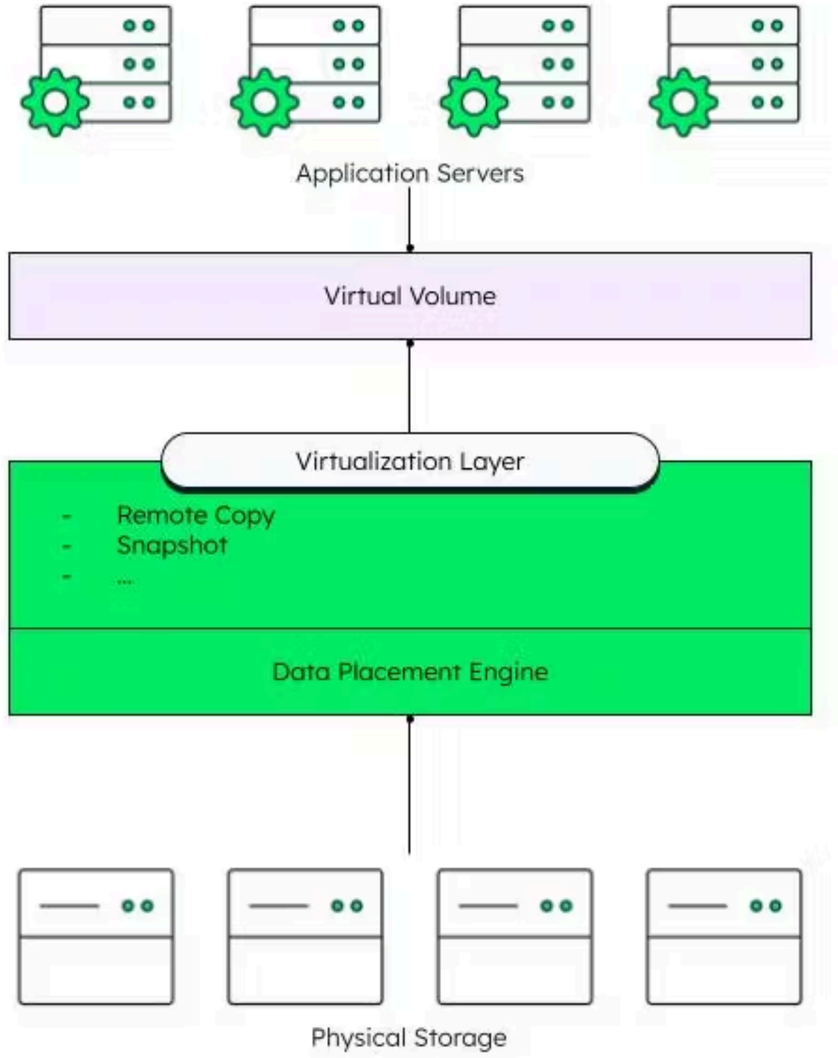
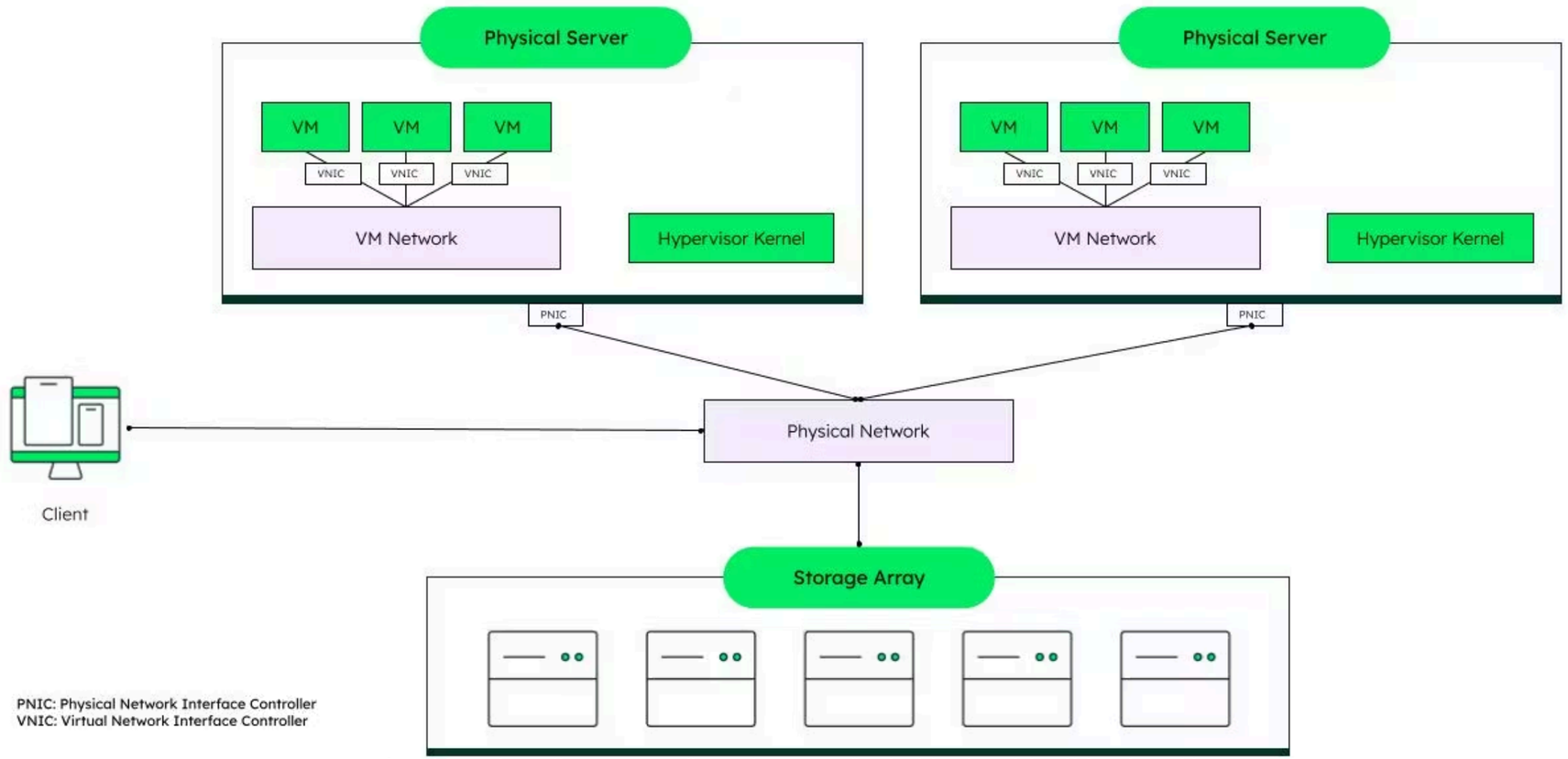


Types of Virtualization

Network Virtualization



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Virtual sub-networks can be created in a software network. These networks can be used to route traffic across different resources in an extensive infrastructure.

The VirtualBox

The Virtual Box

Download

Install

Setup

BASC

The VirtualBox

The Virtual Box

- is a powerful x86 and AMD64/Intel64 virtualization product for enterprise as well as home use.
- runs on Windows, Linux, Macintosh, and Solaris hosts and supports many guest operating systems including but not limited to Windows (NT 4.0, 2000, XP, Server 2003, Vista, Windows 7, Windows 8, Windows 10), DOS/Windows 3.x, Linux (2.4, 2.6, 3.x and 4.x), Solaris and OpenSolaris, OS/2, and OpenBSD.

The VirtualBox

Downloading & Installing VirtualBox

- https://www.virtualbox.org/

Download VirtualBox

Here you will find links to VirtualBox binaries and its source code.

VirtualBox binaries

By downloading, you agree to the terms and conditions of the respective license.

VirtualBox 7.0.20 platform packages

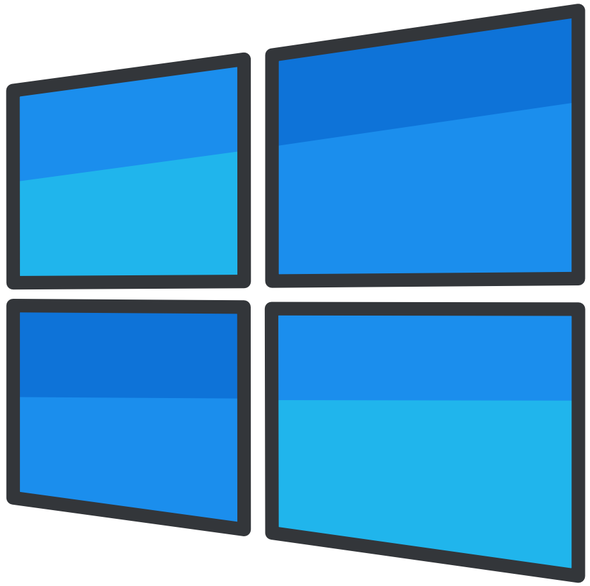
- Windows hosts
- macOS / Intel hosts
- Linux distributions
- Solaris hosts
- Solaris 11 IPS hosts

BASC

The VirtualBox

Setup

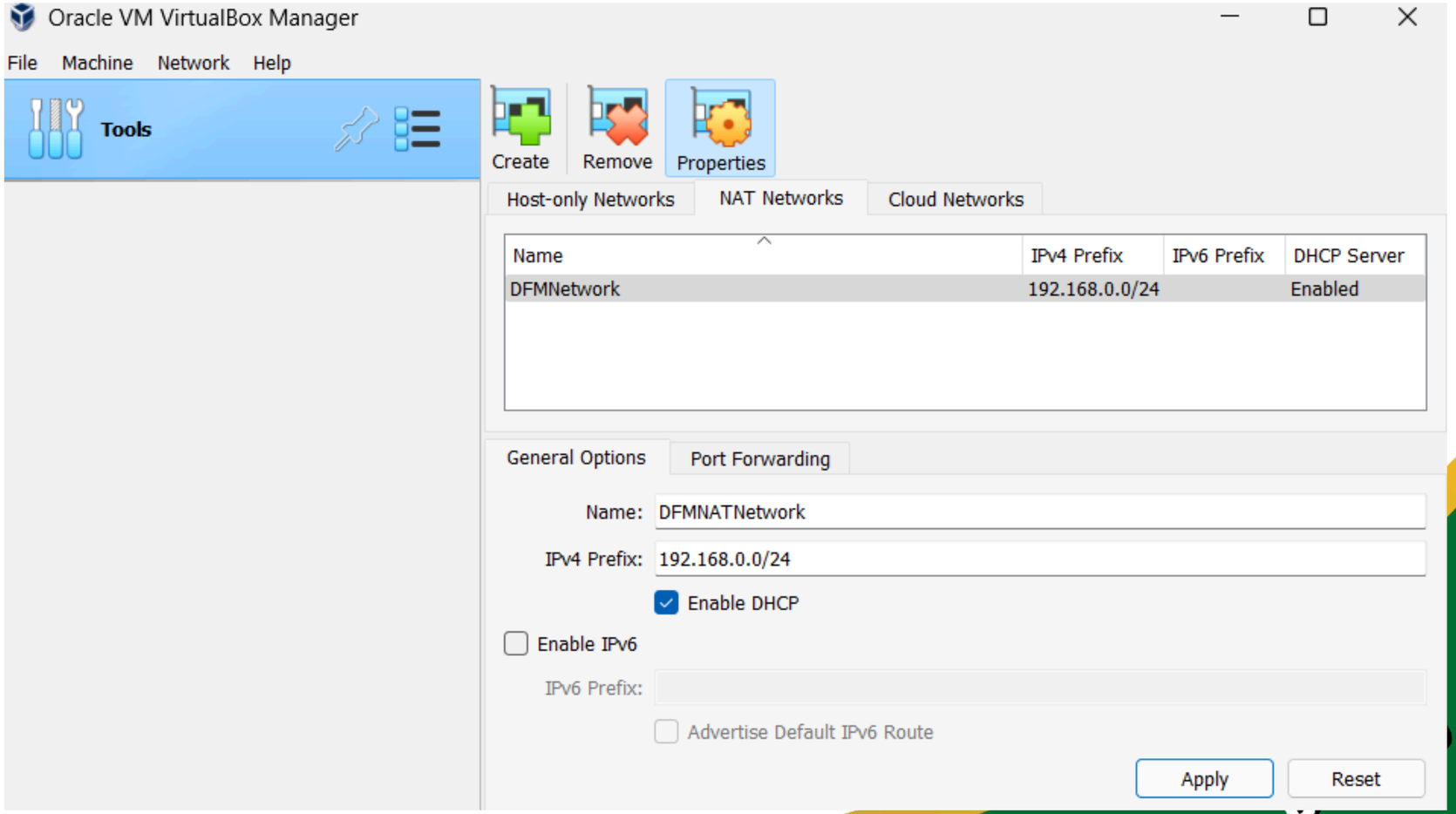
Windows Server 2016



- Download the Windows Server from the Evaluation Center
- https://www.microsoft.com/en-us/evalcenter/evaluate-windows-server-2016
- Click Download ISO Button
- Look for Windows Server 2016
- Fill-out the form using your personal Information
- Click continue
- Select the file type you wanted (We will be using ISO)
- Click Download, wait until finish
- Remember where you saved the file.

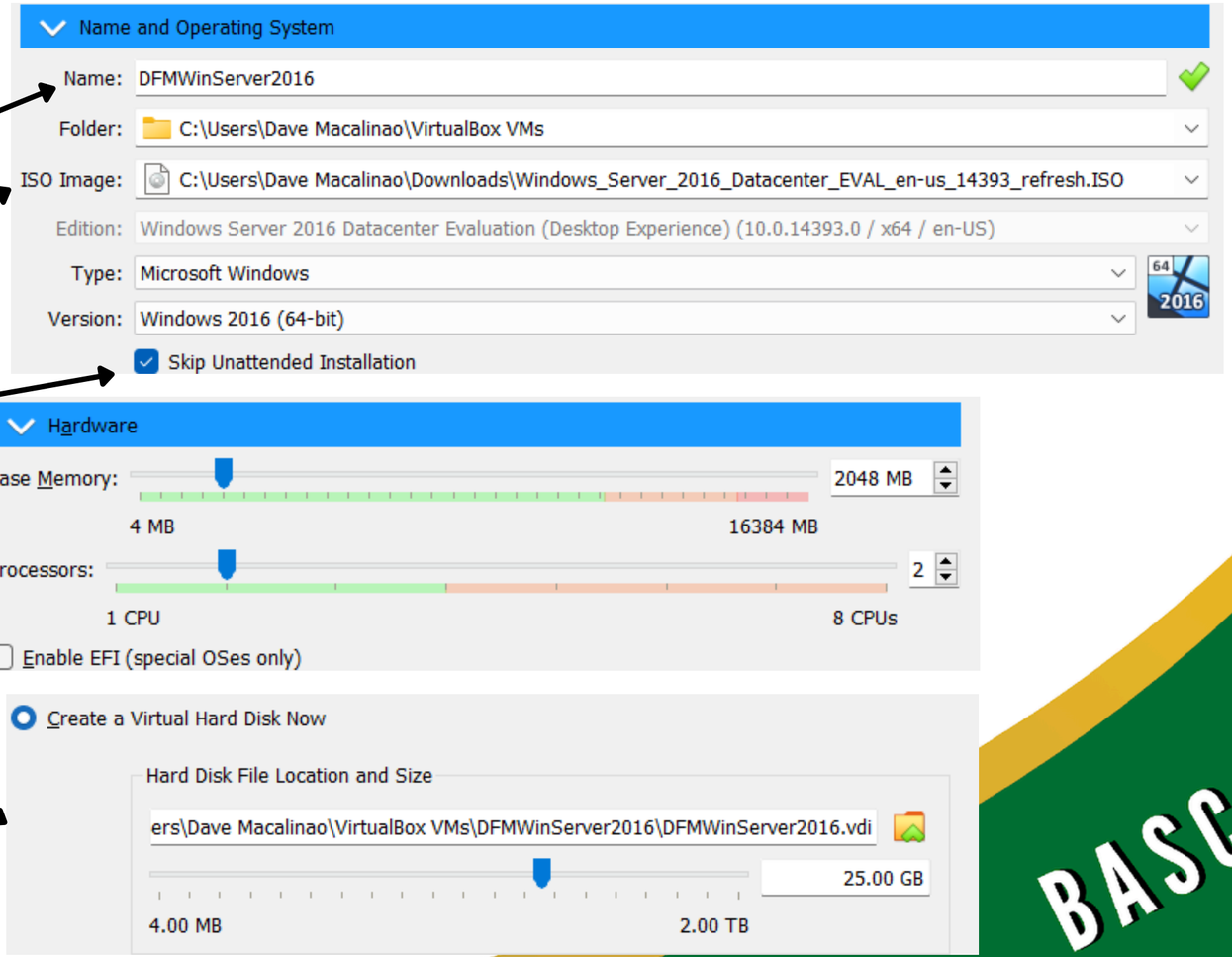
Creating a Virtual Network with Virtual Box

- Open Virtual Box
- Expand Tools, and look for **Network**
- Under NAT Tab, Create a New NAT
- Configure using your Name initials +NATNetwork
  e.g: DFMNATNetwork
- Make sure to configure the IPV4 to 192.168.0.0 / 24
- Check the Enable DHCP



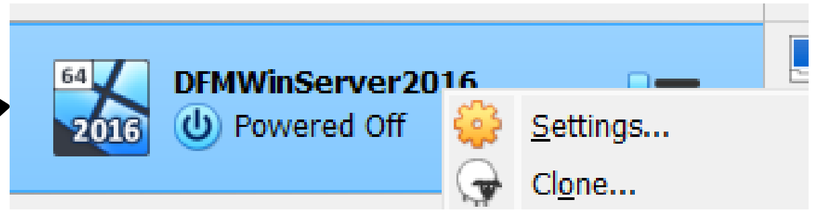
Creating Virtual Machine with VirtualBox

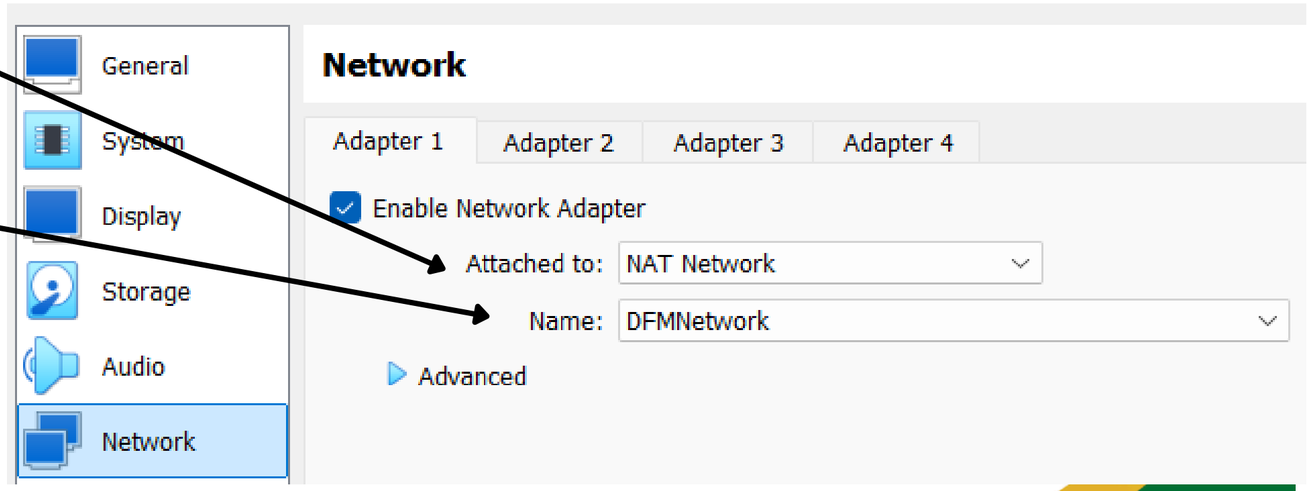
1. Open Virtual Box
2. Create New Virtual Machine
3. Click Expert Mode
4. Configure the Name using your Initials +WinServer2016
5. e.g DFMWinServer2016
6. Select the ISO Image of WS2016
7. Check Skip Unattended Installation
8. Under Hardware Tab, Configure the RAM depending on your computer's RAM (Same as for the HardDisk)
9. After creating it successfully, click ok



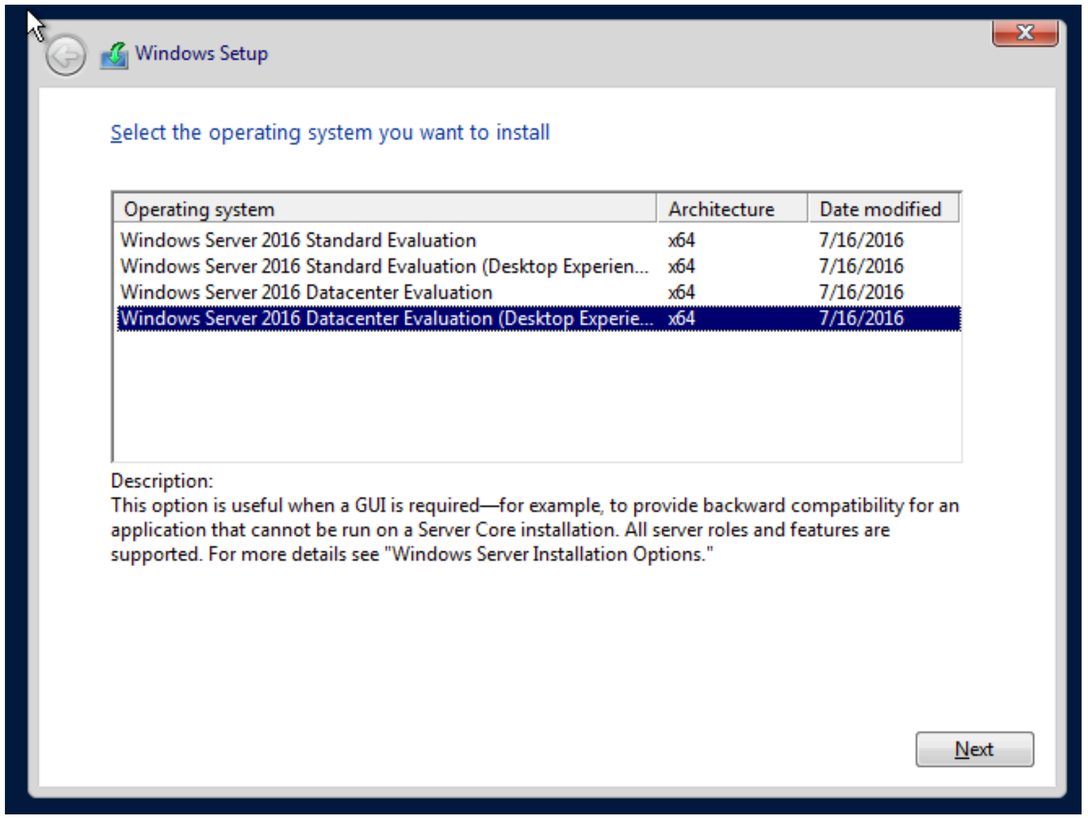
Configuring the Virtual Machine

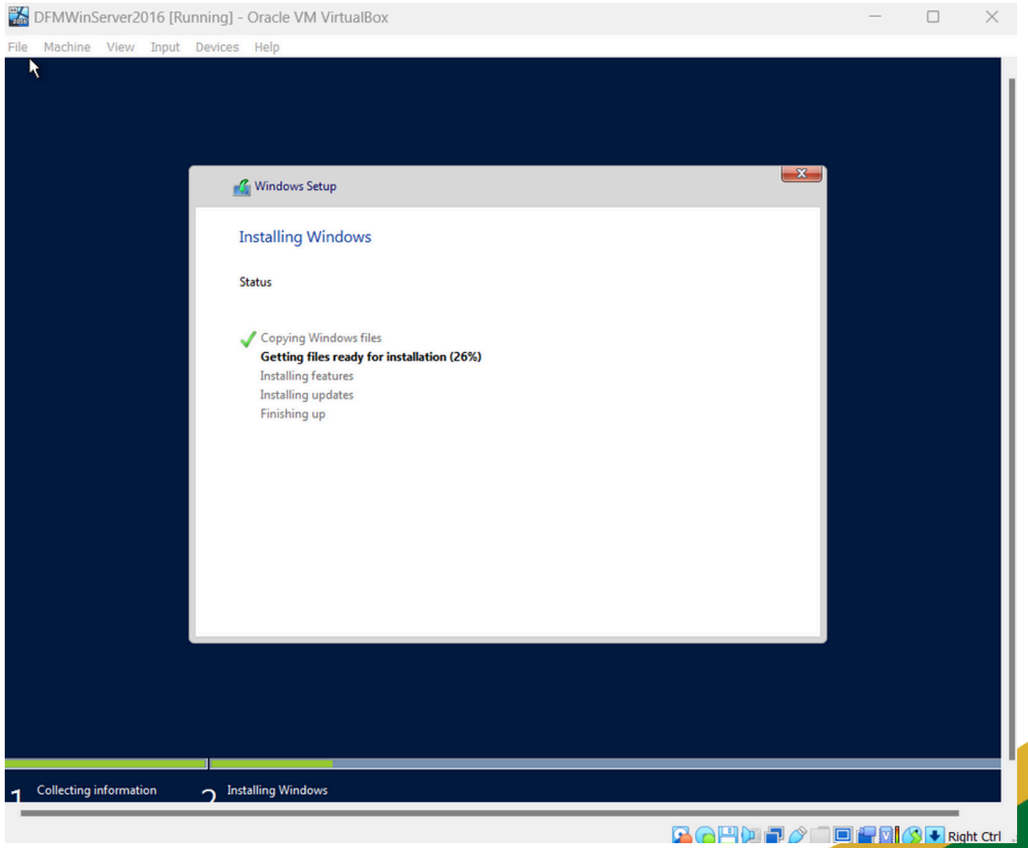
1. Right click your created virtual machine, click settings.
2. Go to Network Tab, Configure the attached to: into NAT Network
3. Select the Name of your created NAT Network
4. Click ok, then run the virtual machine





Installing Microsoft Windows Server 2016 Using VirtualBox

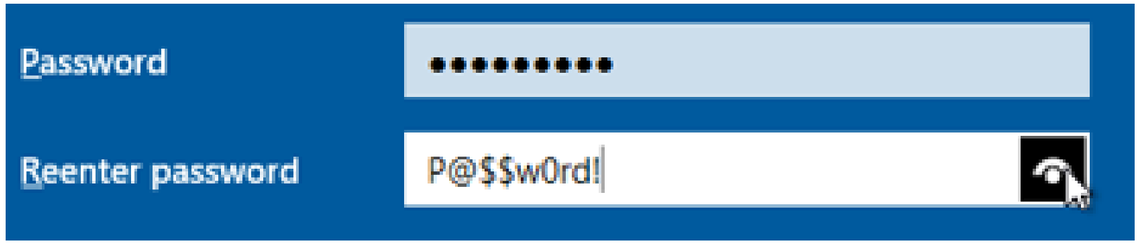


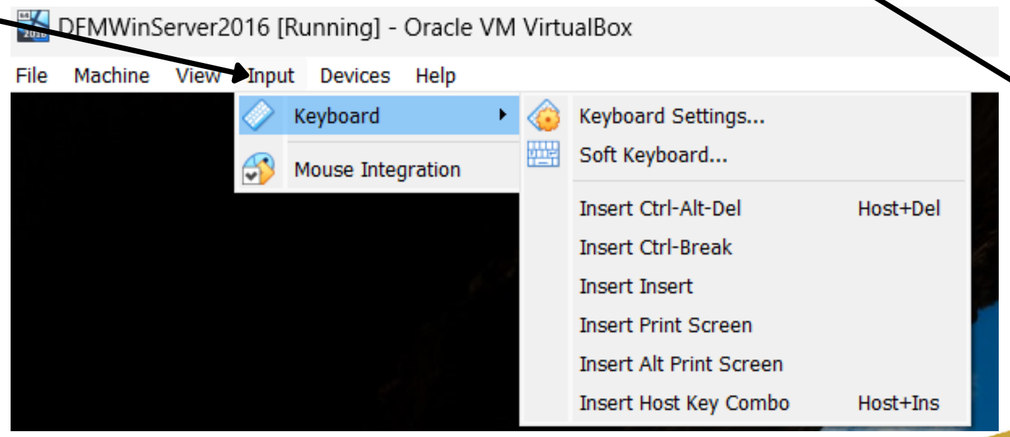


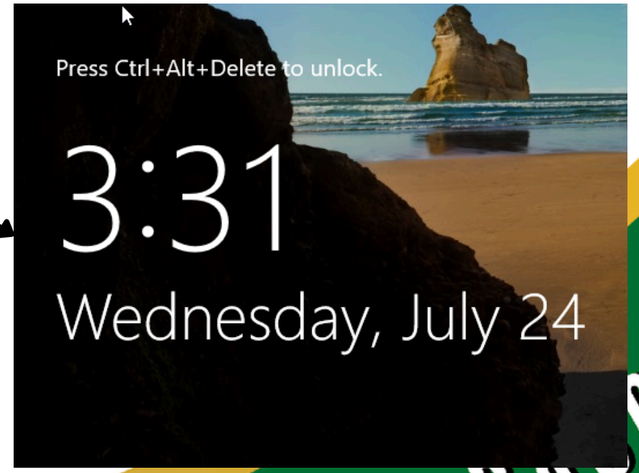
- Run the virtual Machine, choose the Datacenter Evaluation (Desktop Experience), Next >Custom > Select Drive and Install

Installing Microsoft Windows Server 2016 Using VirtualBox

1. Upon booting WS 2016, it will ask for password.
2. Set your password as **P@$$w0rd!**
3. Don't forget this one, as this will be your access the entire server.
4. After setting the password, the screen will proceed to lock screen, press right control key + delete to unlock the screen or go to input tab > keyboard insert Ctrl + alt + del

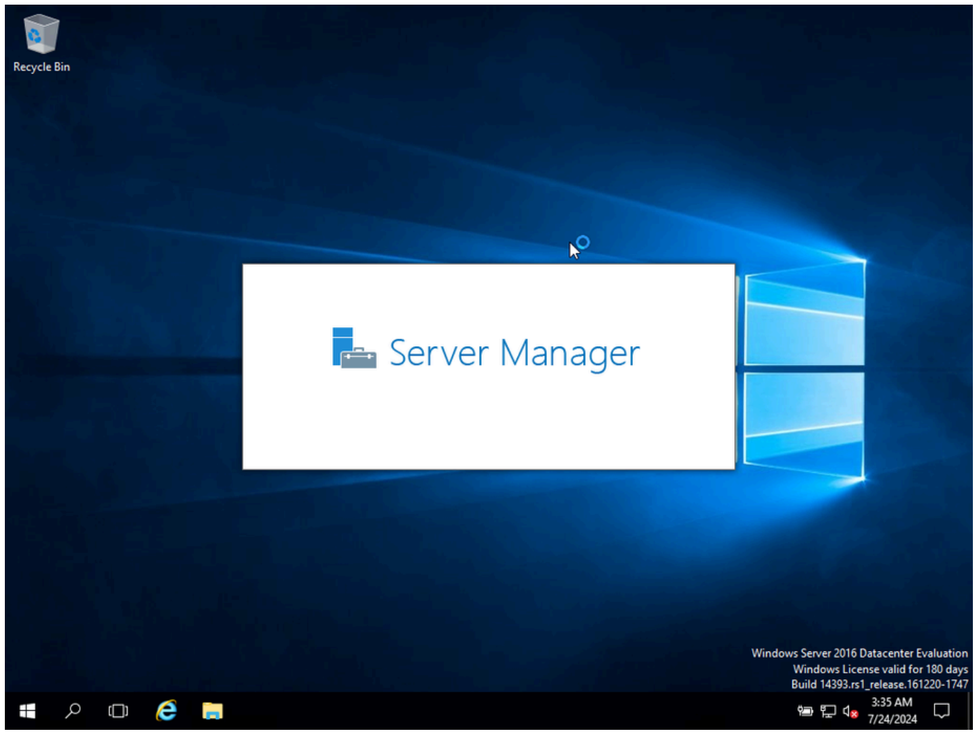


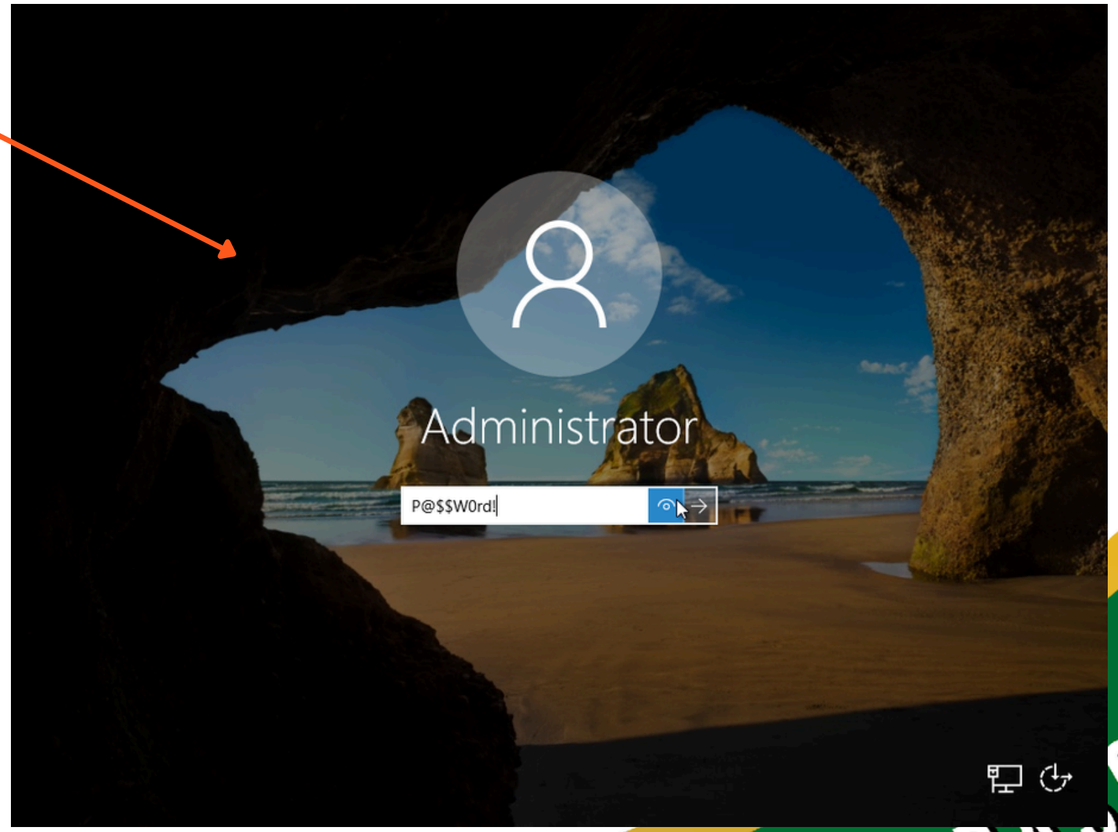




Installing Microsoft Windows Server 2016 Using VirtualBox

1. Type your password. (**P@$$w0rd!**) hit enter.
2. The device will boot into the desktop.





References

- https://www.ibm.com/topics/virtualization
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End of the Discussion

Thank you!