



**Module Code & Module Title - CT5052NP (Network Operating System)**

**Level 5 – Network Operating system**

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*I confirm that I understand my coursework needs to be submitted online via Google Classroom under the relevant module page before the deadline in order for my assignment to be accepted and marked. I am fully aware that late submissions will be treated as non-submission and a mark of zero will be awarded.*

## Contents

1. Introduction .....	1
2. Objective .....	1
3. Required Tools and concepts .....	2
3.1 Concepts to be understand before virtualization .....	2
3.2 Hardware and software required.....	2
3.3 Tools .....	2
4. Steps of Replicate .....	3
4.1 Opening virtual box.....	3
4.2 Giving Virtual machine name and Selecting Top on Operating System.....	3
4.3 Setup of credentials .....	4
4.4 Giving CPU core and RAM to the virtual environment .....	5
6	
4.5 Giving Memory or Storage to ther virtual evironment.....	6
4.6 Virtual environment created.....	7
5. Conclusion .....	7

## Table of figures

Figure 1 : logo of virtual box .....	2
Figure 2 : Opening virtual box.....	3
Figure 3 : Giving name to virtual environment and selecting the OS for it .....	4
Figure 4 : Configuring setup.....	4
Figure 5 : All credentials are filled .....	5
Figure 6: Giving RAM and CPU to the virtual environment .....	6
Figure 7 : Setting the memory for virtual environment.....	6
Figure 8: Virtual environment created .....	7

## 1. Introduction

Virtualization is a technology that combines or divides computing resources to present different, many operating environments using the methodologies of hardware and software partition for complete machine simulation, emulation time sharing and others (Nanda). It helps for proper resource utilization and fast computing of any sort.

In 1960s IBM firstly introduced the concept of virtualization in mainframe computers which has become the core technology presently for supporting multiple users to do simultaneous processing and using applications.

Currently virtualization is being used either for small personal and enterprise handling users or by multi-application, servers and networks runners. Since, single hardware and software frame can be utilized for running many virtual operating system environment and network can be established between those virtual environment for effective computing.

It helps a lot to reduce cost, create versatility in network server storage management by creating isolated environment and dividing resources of single hardware into many operating systems according to need.

Alternative of virtualization are Containerization, Bare-Metal Deployment, Multi-OS Boot, Serverless Computing, Emulation and so on. These all technologies focus on isolated environments for applications, direct hardware resources, code running without infrastructure management, enabling one system mimic another system hardware and software environment, access of multiple operating systems installed in one physical computer but using one at a time. Some of the examples of these technologies are Docker, dual-boot setups, AWS Lambda and so on.

Pros of virtualization are better resource use, scalability, testing capabilities, stronger OS-level isolation and flexibility. Cons of virtualization are overhead and complexity and less efficient than lightweight containers for rapidly scalable applications.

## 2. Objective

To create virtual environment for Windows Server 2022 using VirtualBox with its configuring and setup steps.

### 3. Required Tools and concepts

#### 3.1 Concepts to be understand before virtualization

- a. Operating system – Its functions , configuration and management.
- b. Hypervisor – Its virtual environment management concepts (Type 1- directly on hardware and Type 2- top of an operating system).
- c. Backup and Snapshots – Its concept to capture the VM state at specific time.
- d. Cloud computing, Disk partitioning, Networking Basics, CPU and memory management.

#### 3.2 Hardware and software required.

Software : VirtualBox, Windows server 2022

Hardware: Processor-64-bit processor

RAM- At least 4GB

Storage – 10 GB free space

Also, Compatable host and basic graphics.

#### 3.3 Tools



*Figure 1 : logo of virtual box*

VirtualBox is a free, open-source virtualization application which helps to create many virtual environment that allows to run multiple operating system on one

computer developed by oracle. It uses Type 2 hypervisor that means the virtual environment runs on top of host operating system rather than directly on the hardware.

## 4. Steps of Replicate

### 4.1 Opening virtual box

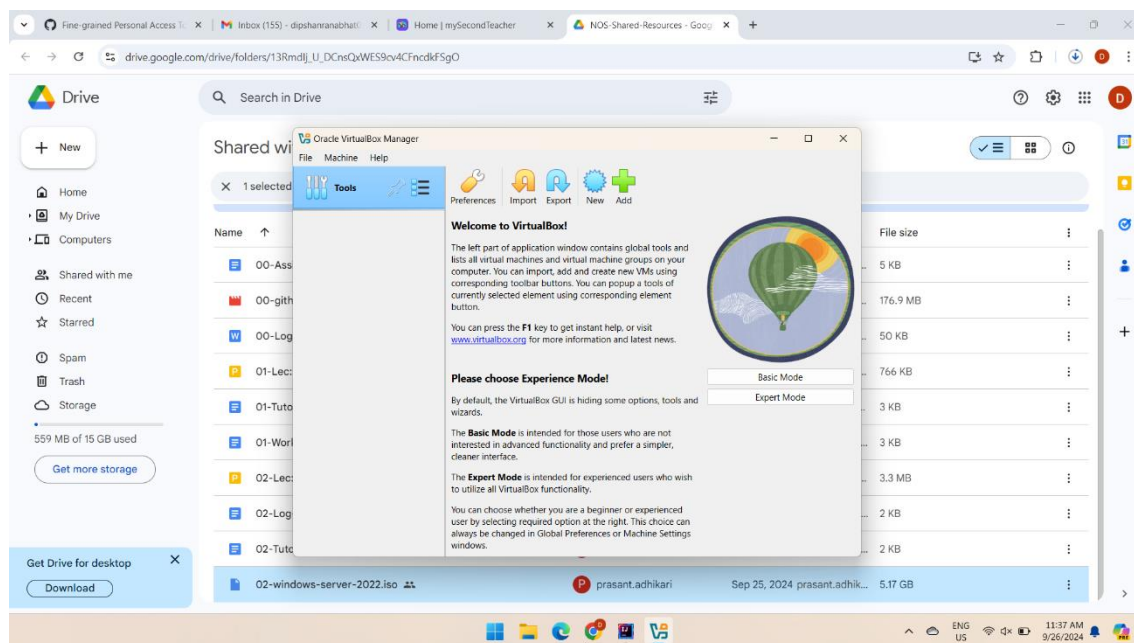


Figure 2 : Opening virtual box

### 4.2 Giving Virtual machine name and Selecting Top on Operating System

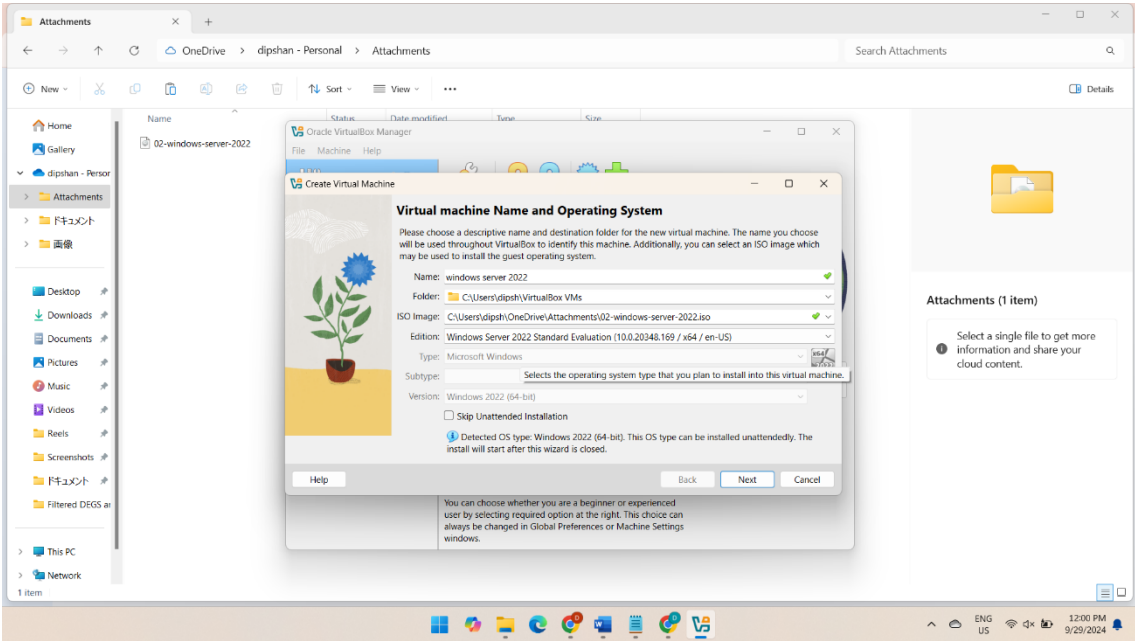


Figure 3 : Giving name to virtual environment and selecting the OS for it

### 4.3 Setup of credentials

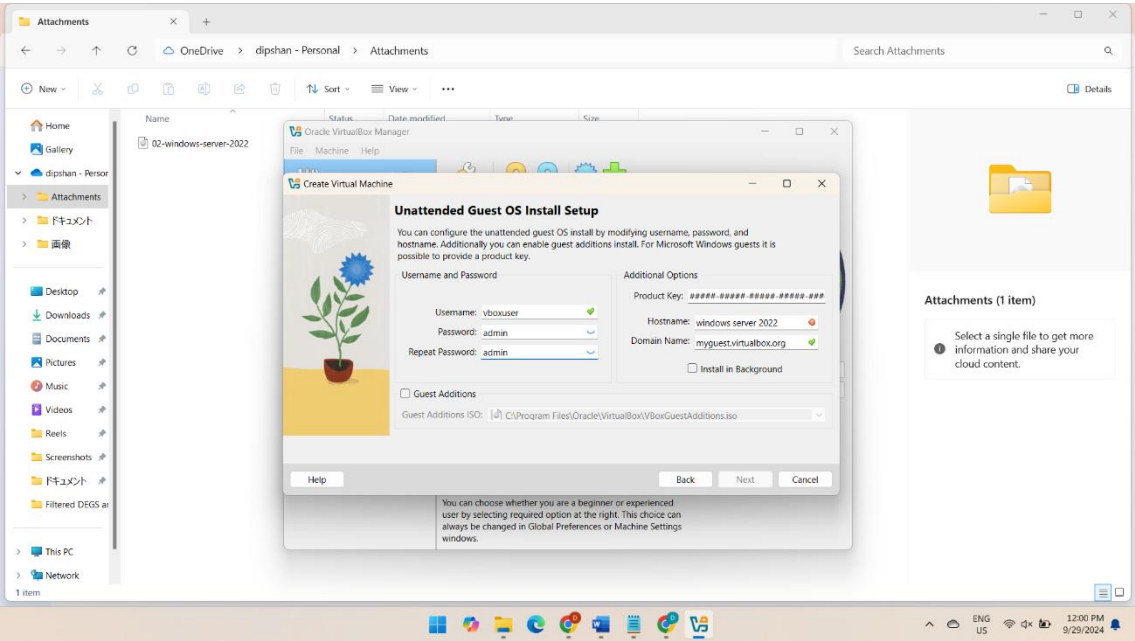


Figure 4 : Configuring setup

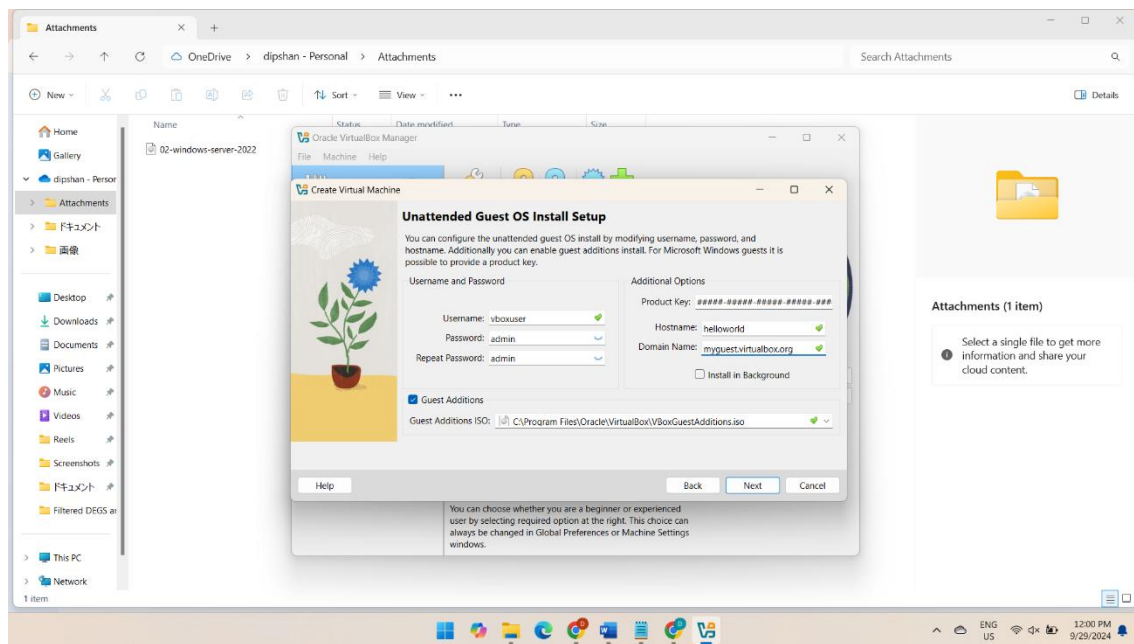


Figure 5 : All credentials are filled

## 4.4 Giving CPU core and RAM to the virtual environment

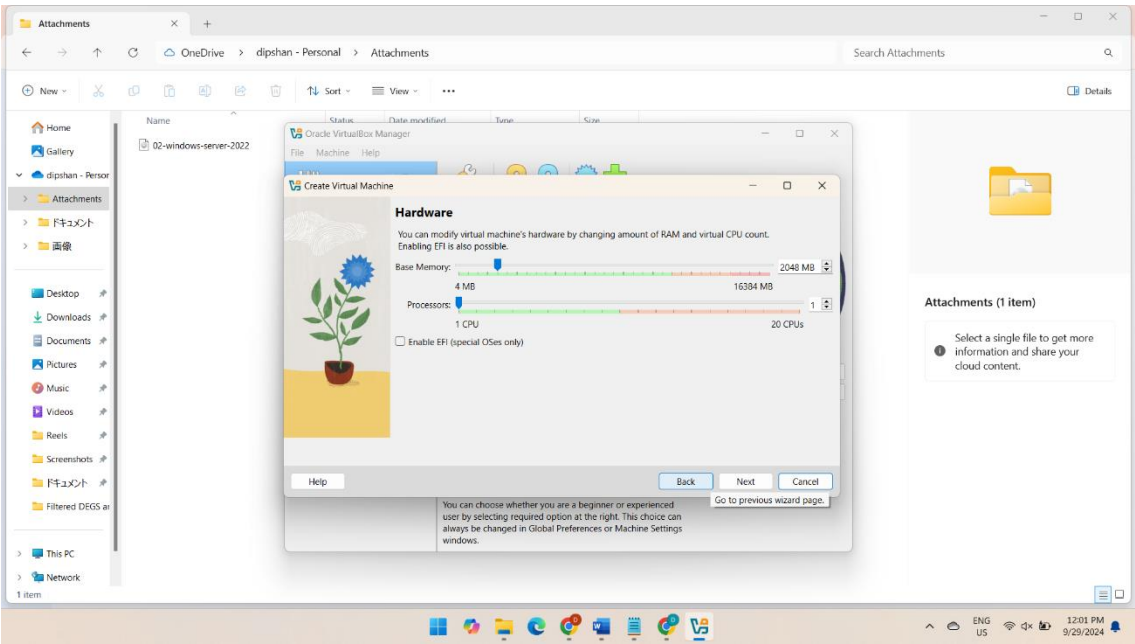


Figure 6: Giving RAM and CPU to the virtual environment

## 4.5 Giving Memory or Storage to ther virtual environment

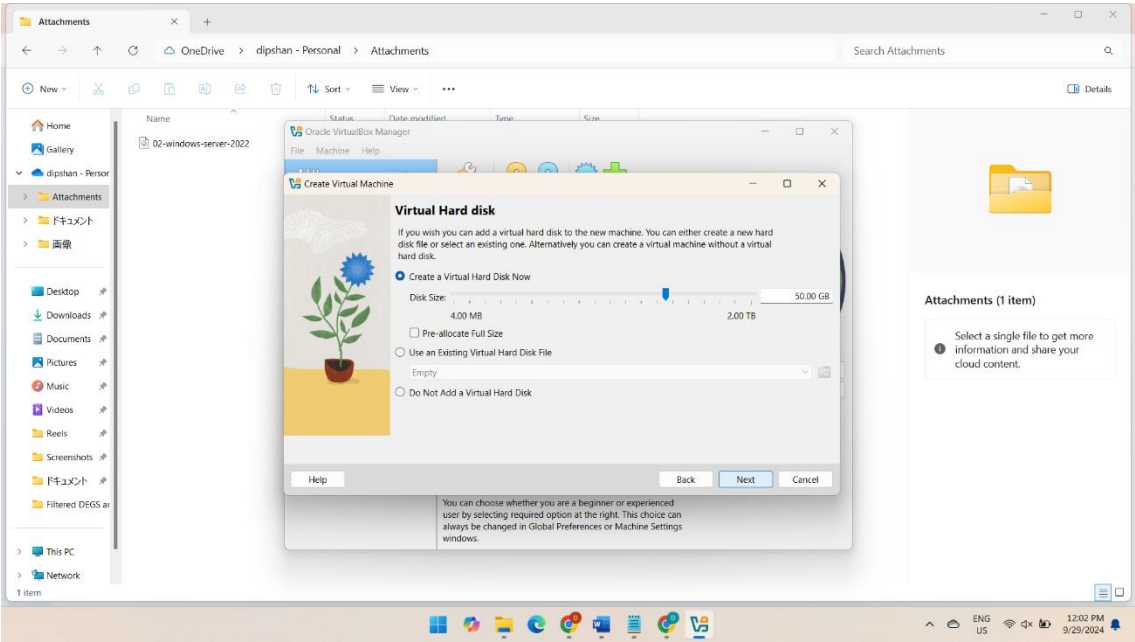


Figure 7 : Setting the memory for virtual environment



4.6 Virtual environment created

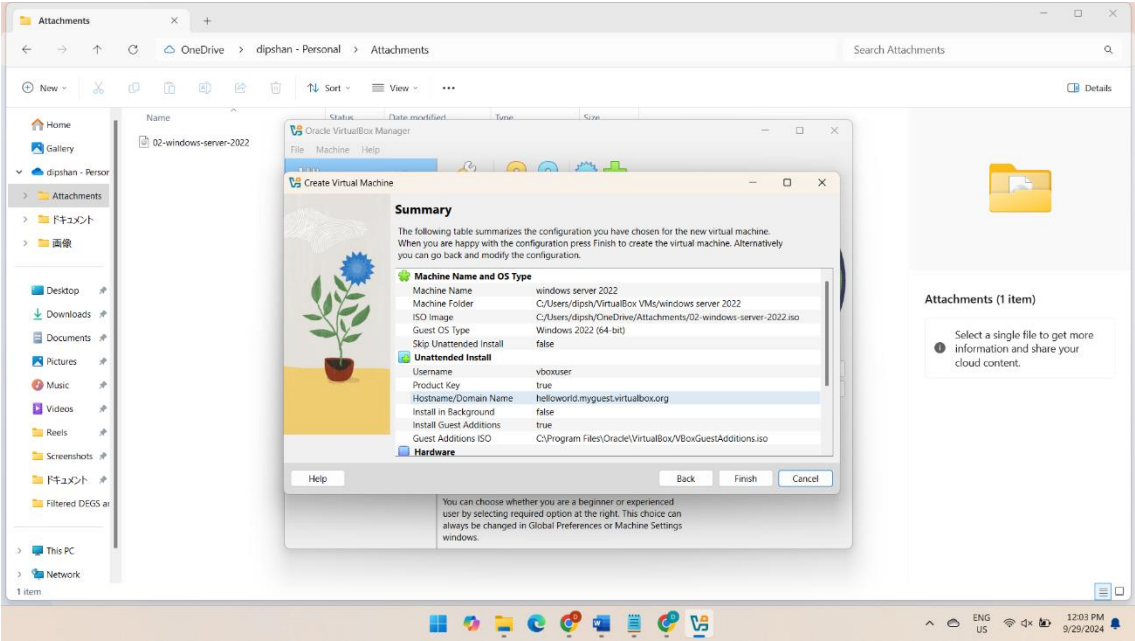


Figure 8: Virtual environment created

5. Conclusion

We have successfully ran Windows server 2022 operating system virtual environment using Virtual box.