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1. AIM

The primary aim of this workshop is to provide hands-on in-depth learning experience focusing on the installation of Windows Server within a virtualized environment established with virtual box. It offers information on how hyper – v manager was used to construct a virtual environment, highlighting its importance in context of creating virtual environments. It not only provides theoretical knowledge but also helps to build the abilities necessary for managing, maintaining, and troubleshooting virtual machines. The core of the workshop is a step-by-step walkthrough of installing the Windows Server operating system in a virtualized environment. This detailed approach ensures understanding of the fundamental concepts of operating system installation and setup in addition to help accomplish the task at on hand.

2. OBJECTIVE

The primary objective of this practice of installation of windows server operating system on virtual machines are as follows:

- To provide a solid foundation knowledge about virtual machines.
- To offer knowledge about allocating CPU, memory, and storage resources for installation of operating systems.
- To provide hands-on learning experience through step-by-step installation process including clear and informative screenshots.
- To present a through understanding of essential resources like ISO files in context of operating system installation on virtual environments.

3. REQUIRED TOOLS AND CONCEPTS

The concepts of the installation of operating system on virtual box and the tools used while performing this task are described below:

3.1. Tools

3.1.1. Hyper-V Manager

Hyper-V Manager is an administrative tool that allows to remotely and locally administer Hyper-V hosts and virtual machines (VMs) which provides a graphical user interface (GUI) for centralized management of Hyper-V virtual environments (NAKIVO, 2023). With the help of Hyper-V Manager, one may alter different Hyper-V settings as well as create, configure, and delete virtual machines (VMs), virtual disks, virtual switches, and network adapters. It can host VMs with Windows, Linux, and FreeBSD guest operating systems and Supports VHD and VHDX format. Users can allocate resources, create, administer, and customize virtual machines, as well as carry out operations like snapshot management, live migration, and remote connections to VMs.

3.1.2. ISO File (Windows Server 2022)

An ISO file is a single file that contains an identical copy of a whole optical disk, such as a CD, DVD, or Blu-ray which is also frequently called an ISO image, is a scaled-down copy of large quantities of data (Naor, 2023). They are widely used for installing or reinstalling operating systems like Windows, Linux, or macOS. It is used to install or boot operating system while configuring a virtual machine in hyper- v manager. It improves flexibility and effectiveness in system administration by making it simple to deploy and manage operating systems and software within virtual environments.

3.2. Concepts

The installation of software, in particular, VirtualBox, on our computer, is the main idea behind this workshop. The first step is to build a virtual environment for a new operating system. Here, hyper -v manager is used as a tool to install Windows Server. Then, essential resources managed by the Hyper-V manager are allocated to ensure the new operating system runs well within this virtual environment, including as RAM and storage. A name is also assigned to the operating system that runs in this virtual environment.

Following this initial setup, the procedure of connecting the virtual CD/DVD drive to physical host drive by specifying the drive's name proceeds after this first configuration. The operating system's ISO image is then retrieved locally. To get the new operating system ready for use, this ISO image is placed into the virtual CD/DVD drive. The process continues with additional steps to setup and set up the new operating system within the virtual environment. This process allows us to effectively create and run the desired operating system on our computer systems.

4. STEPS

4.1. Step 1

The first step in installing Windows involves connecting to the server on the local computer, which allows communication with the local computer and sets the server's name or username as the default name.

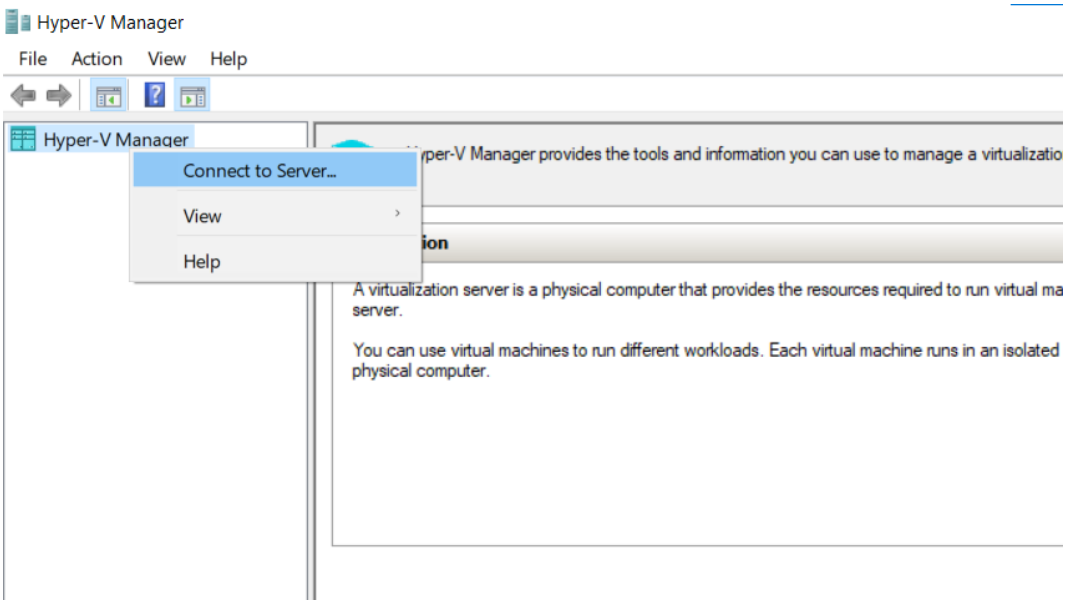

Figure 1: Connecting to the Server

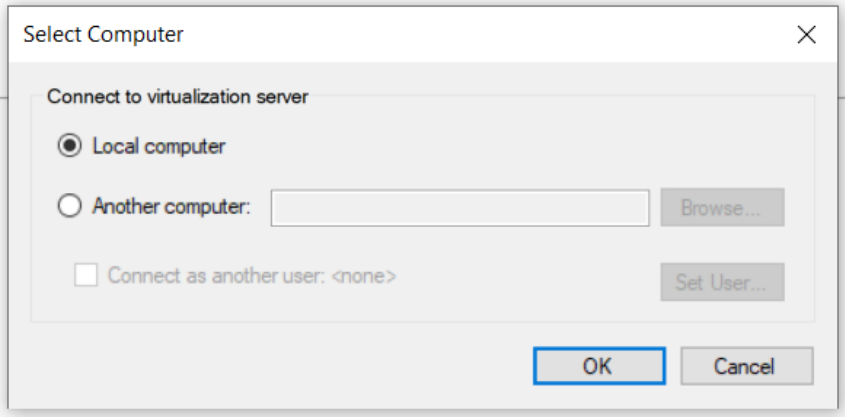

Figure 2: Connecting to virtualization server on local computer.

4.2. Step 2

After username is provided, username was selected to create a virtual machine as virtualization is configured in this username.

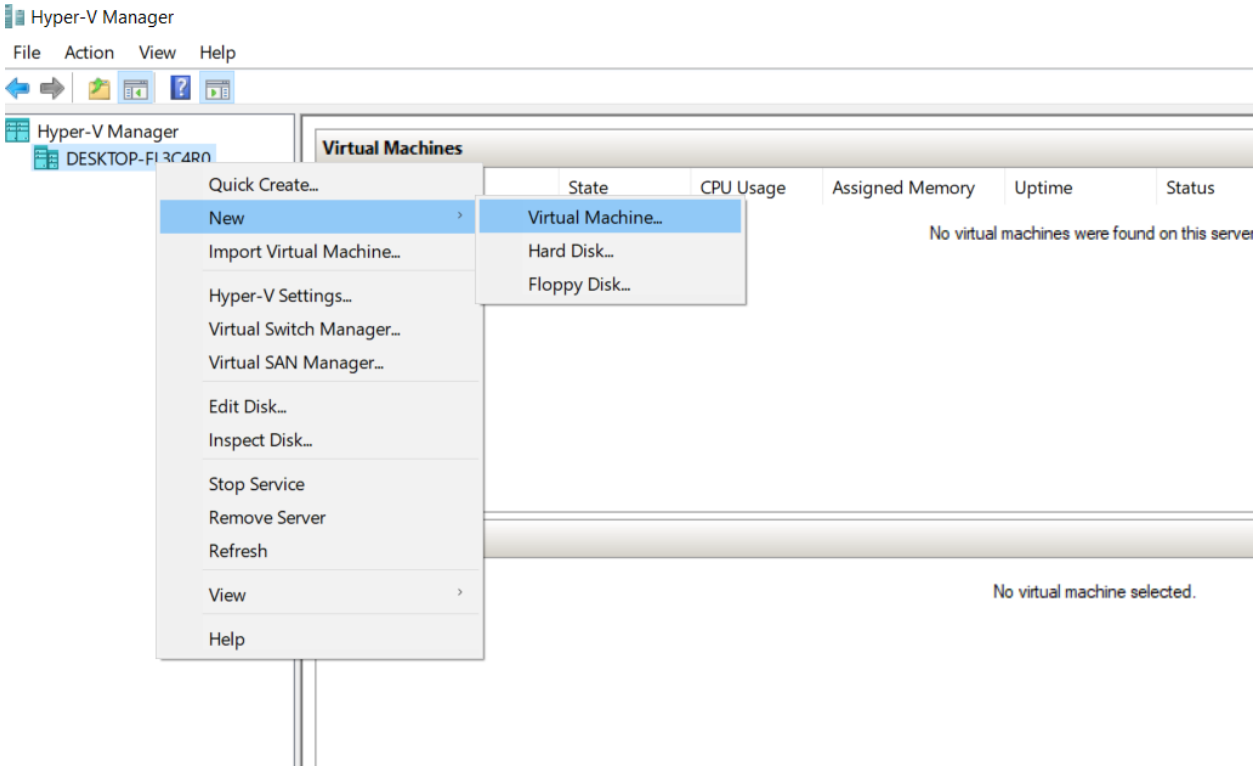

Figure 3: Creating a new virtual machine.

4.3. Step 3

Following that, a box with instructions that serve as a guide for constructing virtual machines appears. The space is set to default, and the name was specified for virtual machine.

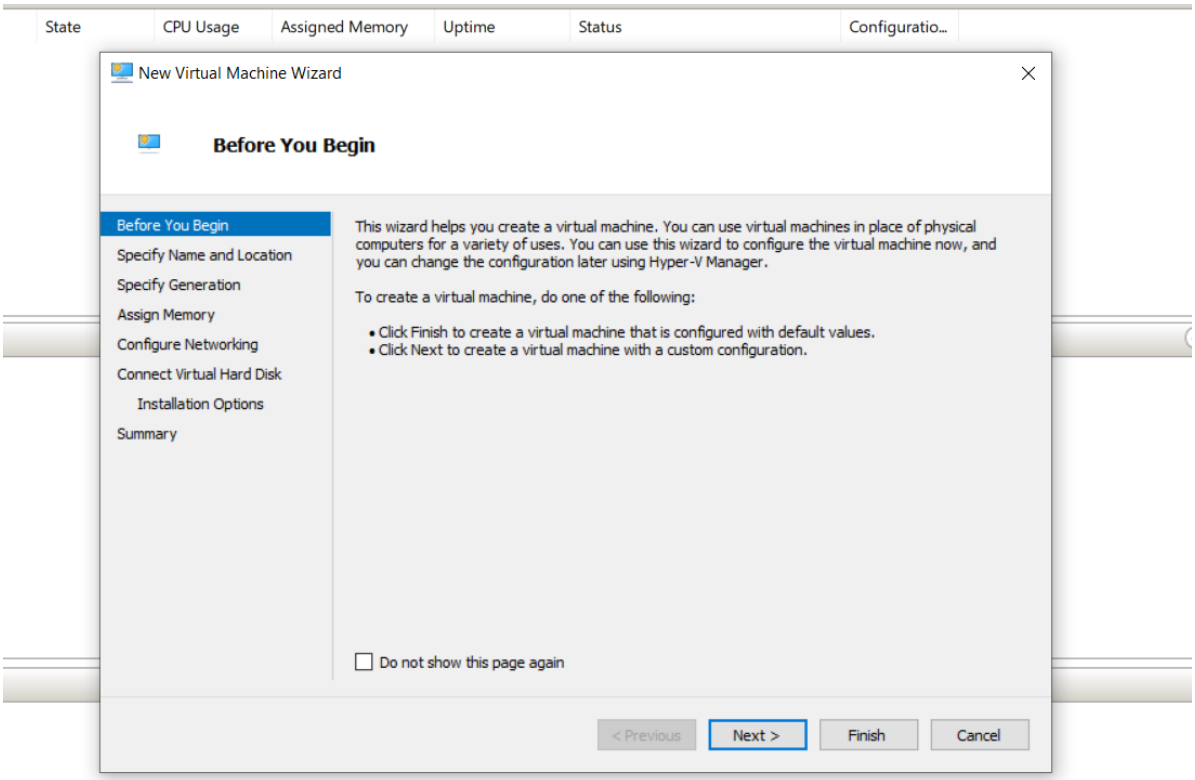

Figure 4: Installation Guide

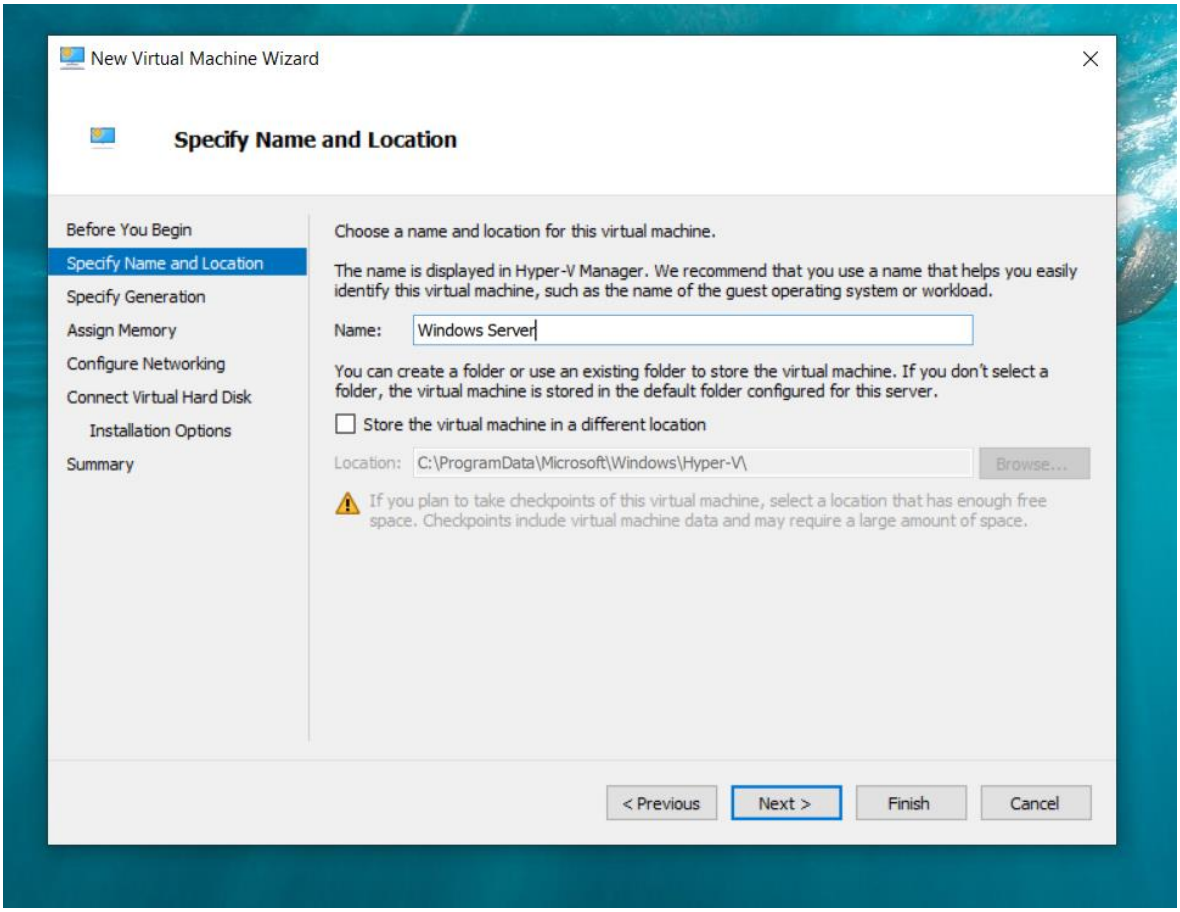

Figure 5: Specifying name and locations.

4.4. Step 4

Generation 1 was selected as generation of virtual machine.

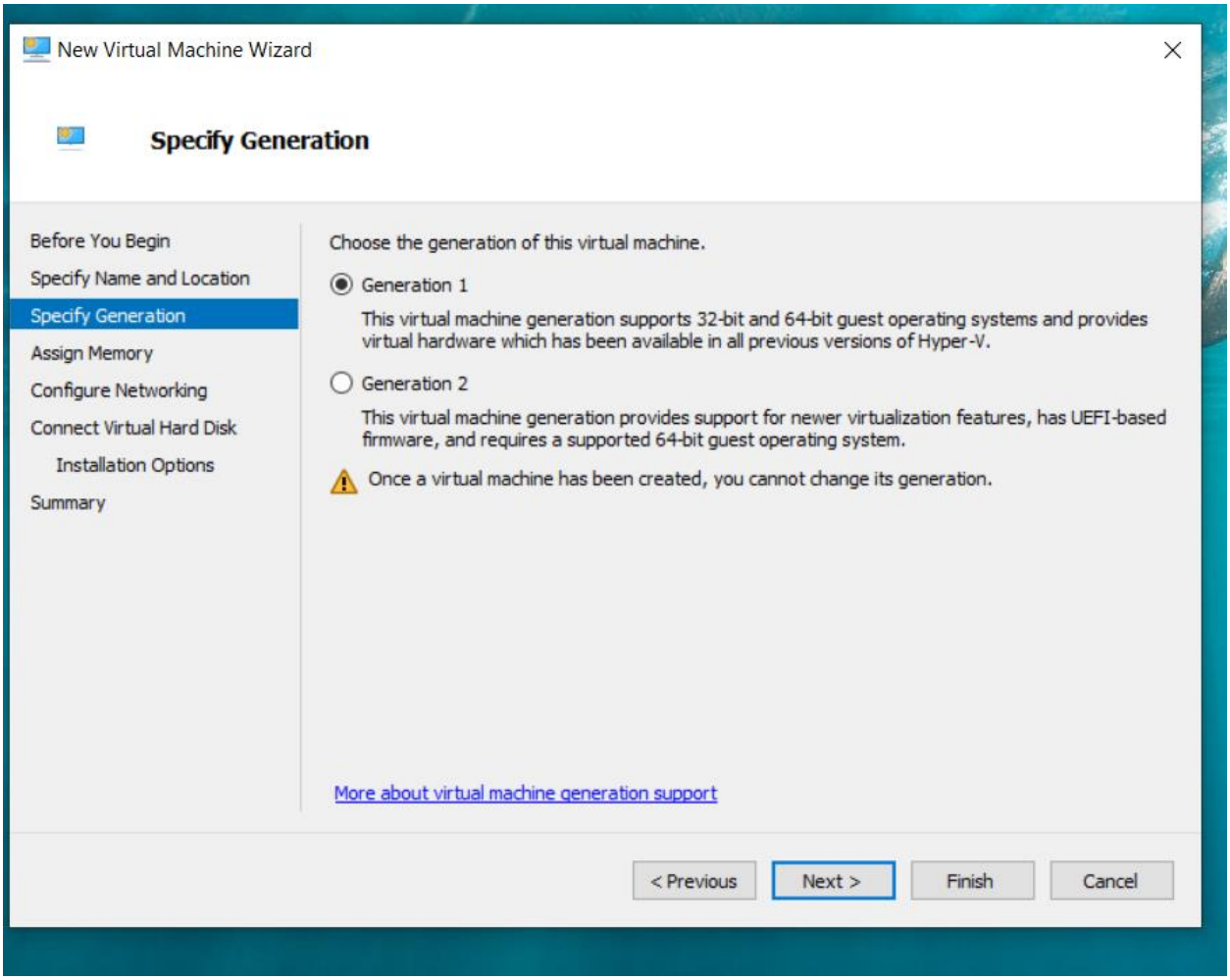

Figure 6: Selecting generation of virtual machine.

4.5. Step 5

Following that, 4GB memory was allocated to the virtual machine. This memory is allocated for RAM and the future performance of the VM largely depend on the amount of allocated memory.

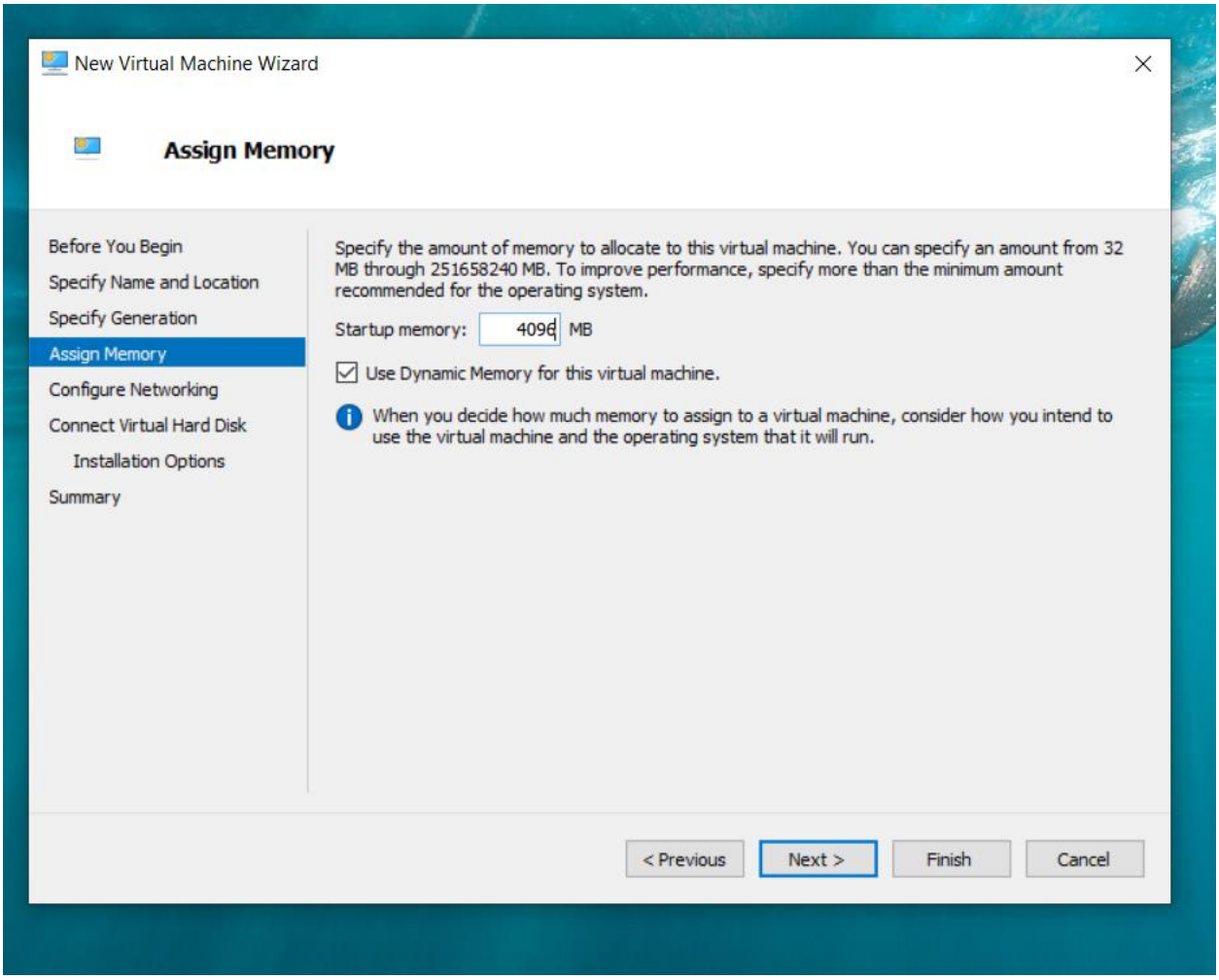

Figure 7: Assigning memory for RAM.

4.6. Step 6

Since, each new virtual machine includes a network adapter, default switch was configured as network adapter which helps to connect to the internet.

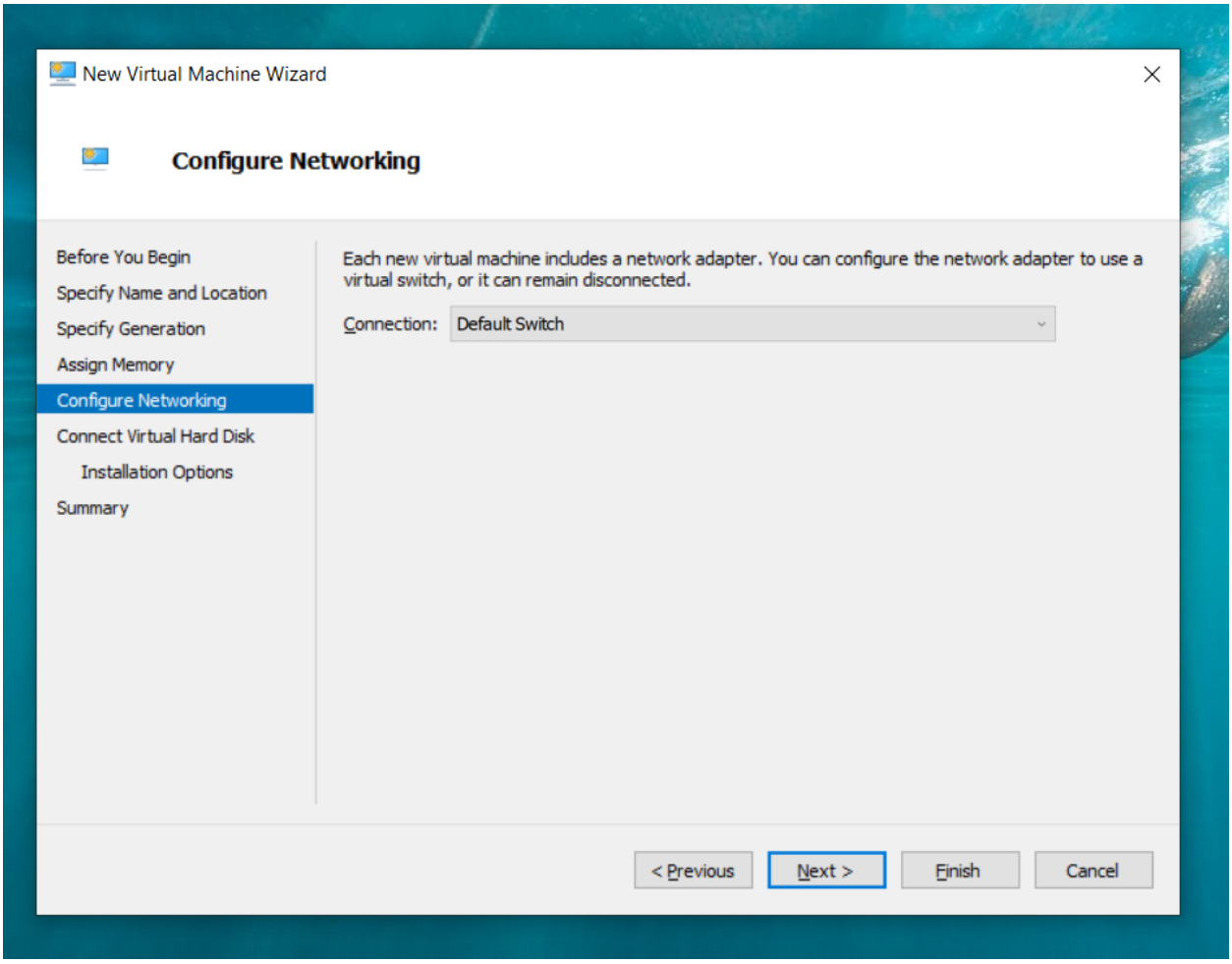

Figure 8: Configuring Network

4.7. Step 7

Then, a new virtual hard disk was created, which requires specifying its name, location, and size. Name and location are set as default and hard disk size was set to 50GB.

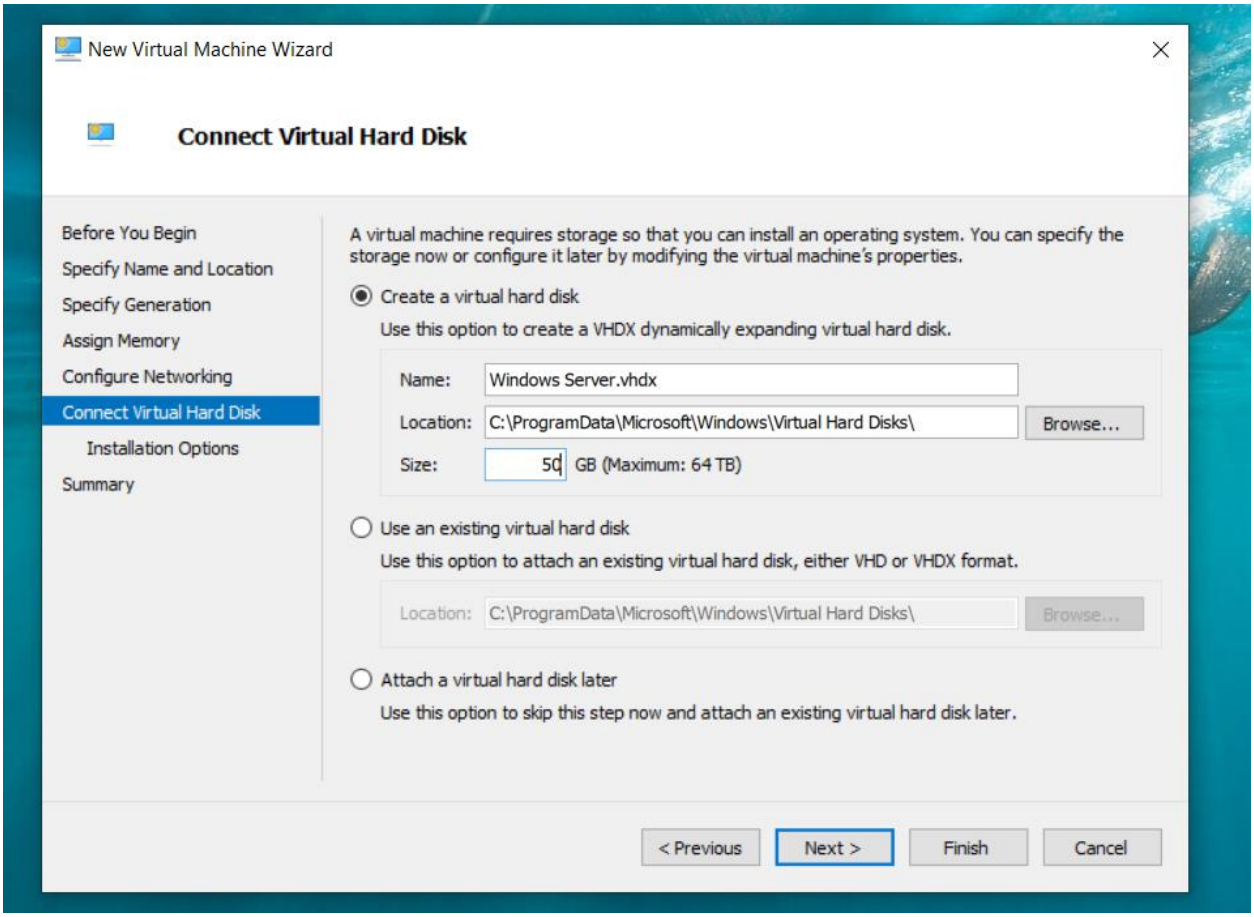

Figure 9: Creating new virtual hard disk specifying its size.

4.8. Step 8

Now from the ‘Install an operating system from a bootable CD/DVD-ROM’ option, under the ‘Image File’ selection option, downloaded ‘ISO’ file is selected and a summary of selected options is shown in next steps.

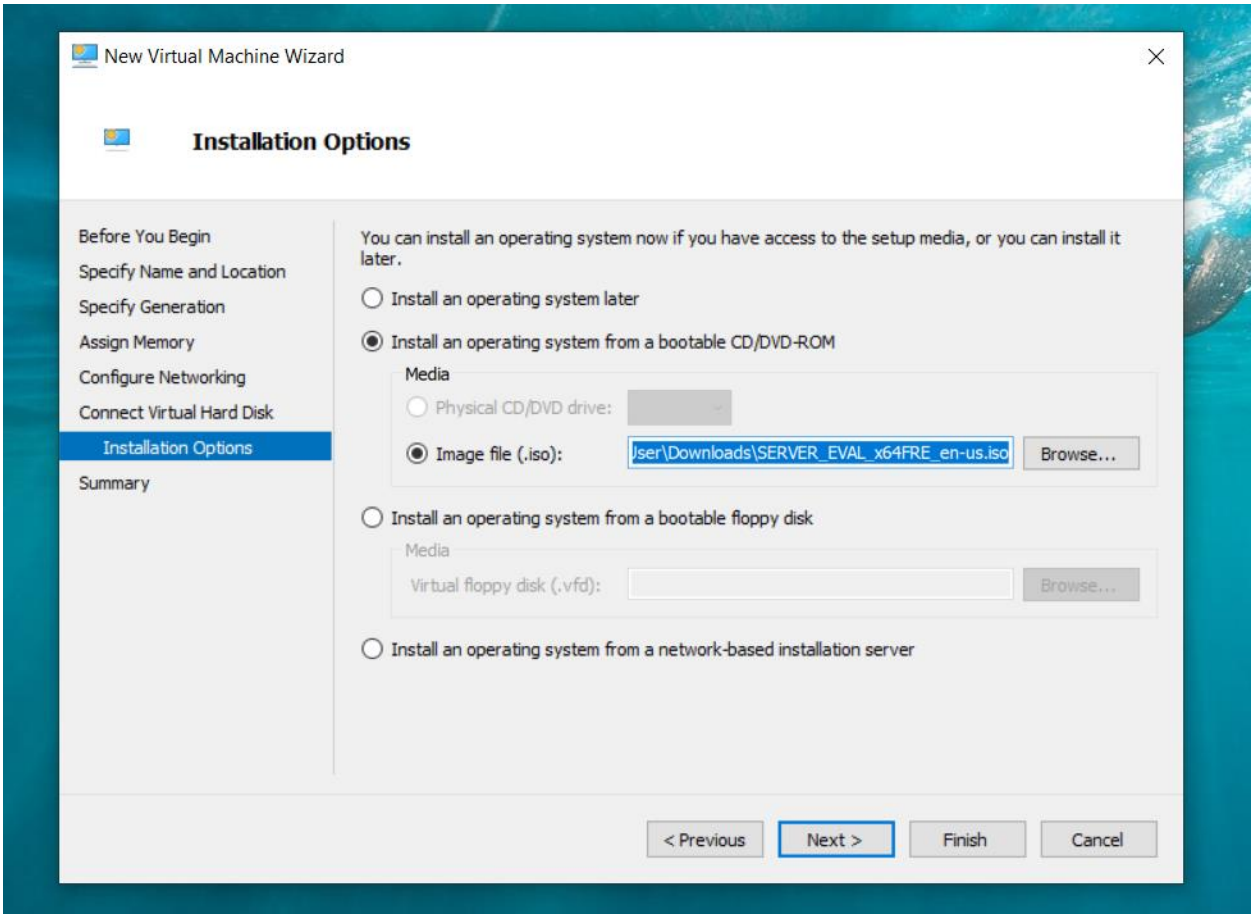

Figure 10: Adding ISO file from local computer.

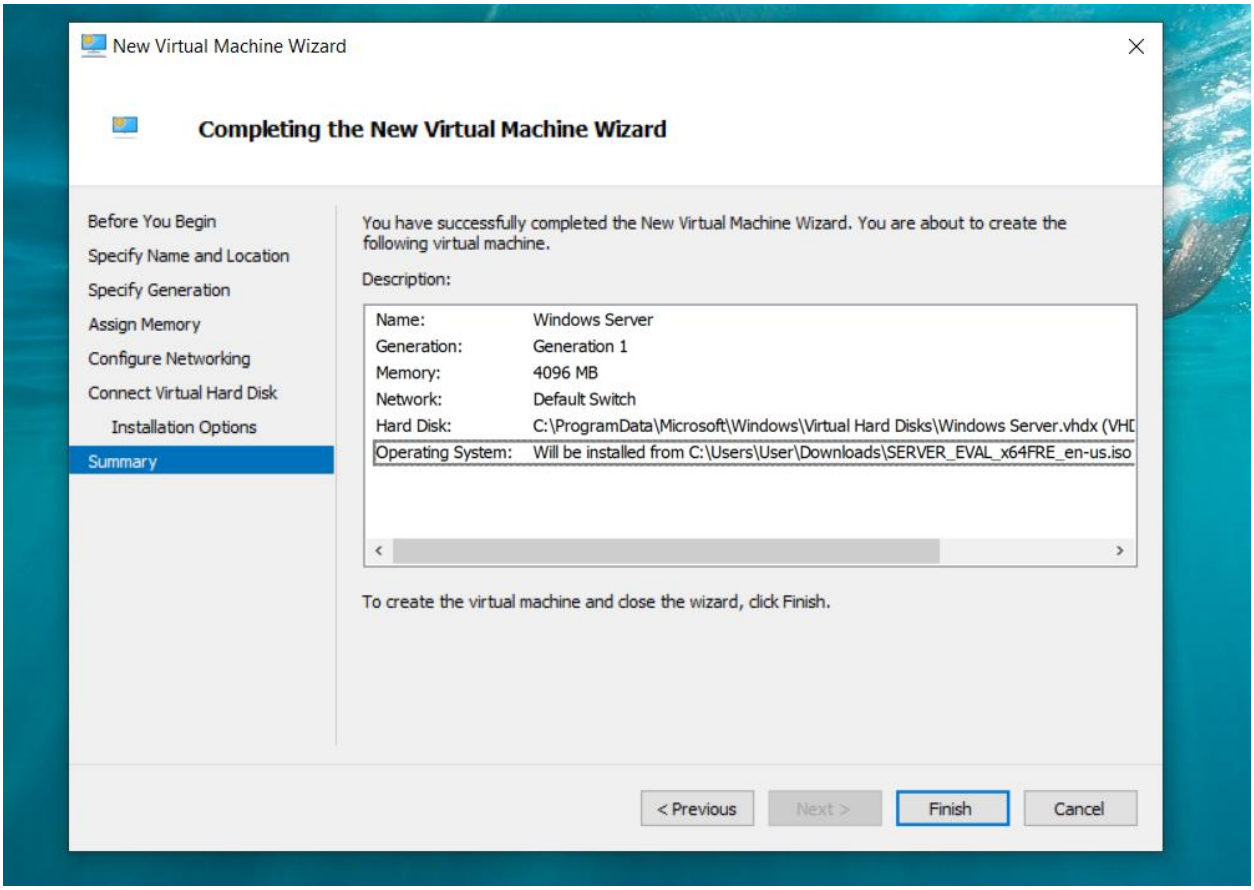

Figure 11: Summary of selected options

4.9. Step 9

Following that, newly created virtual machine in Hyper – V Manager was selected and was started and then connected.

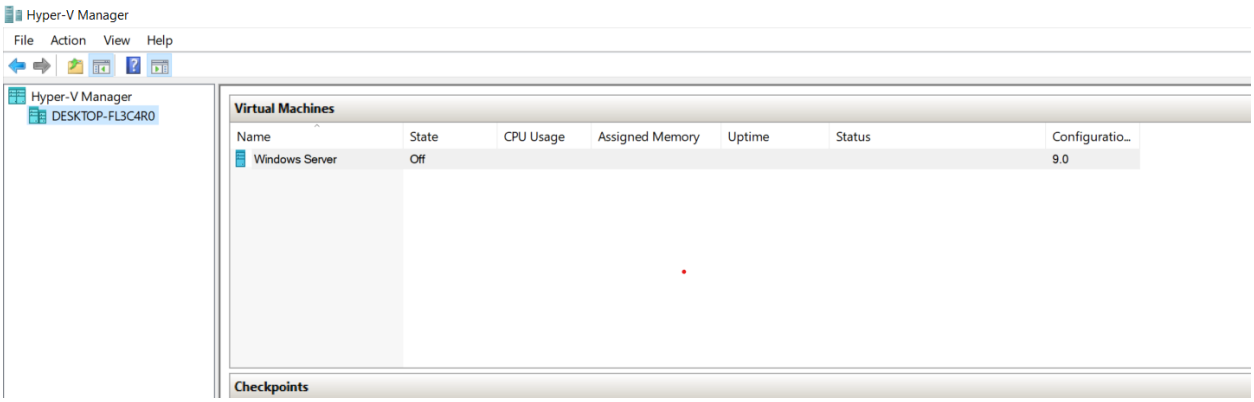

Figure 12: Newly created virtual machine

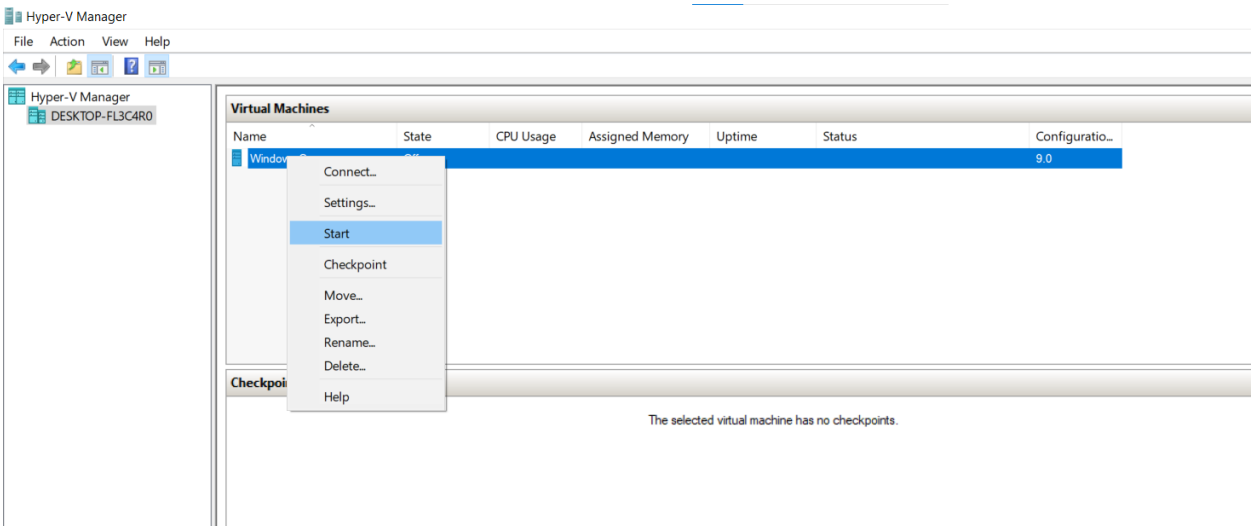

Figure 13: Starting newly created virtual machines.

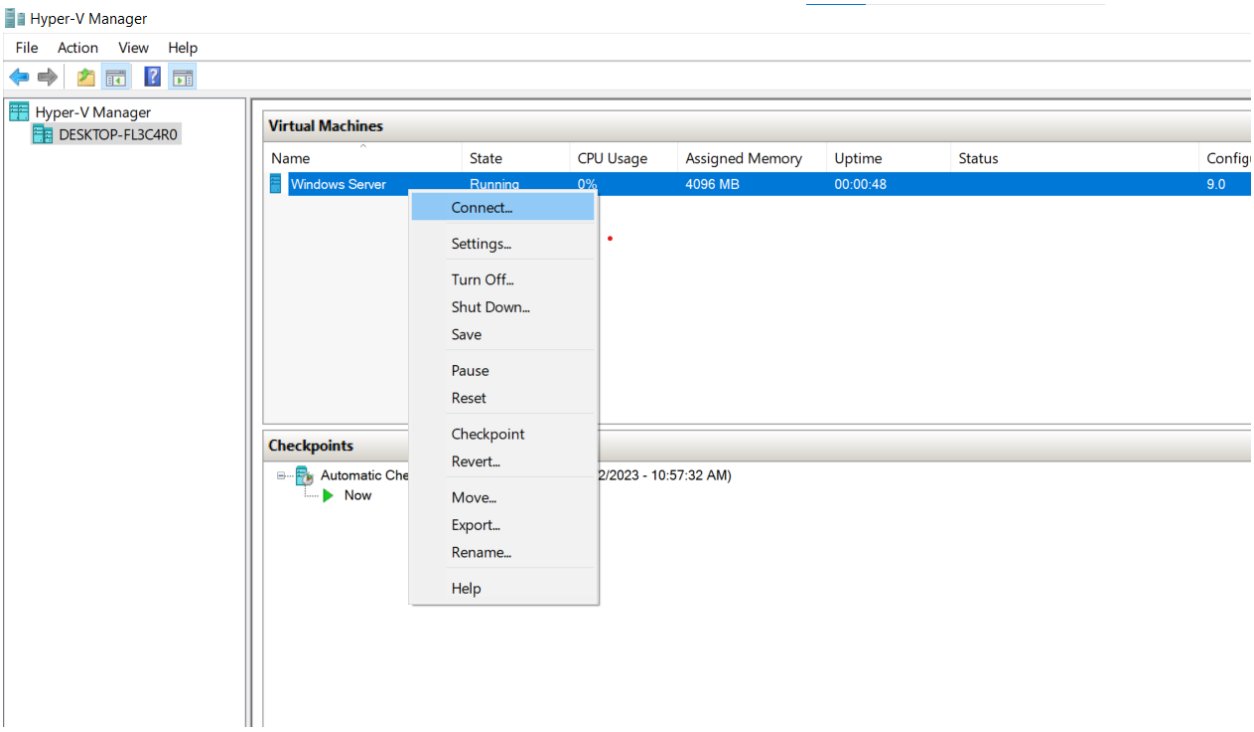

Figure 14: Connecting newly created virtual machines.

4.10. Step 10

Following that, installation process was started followed by selection of desired language.

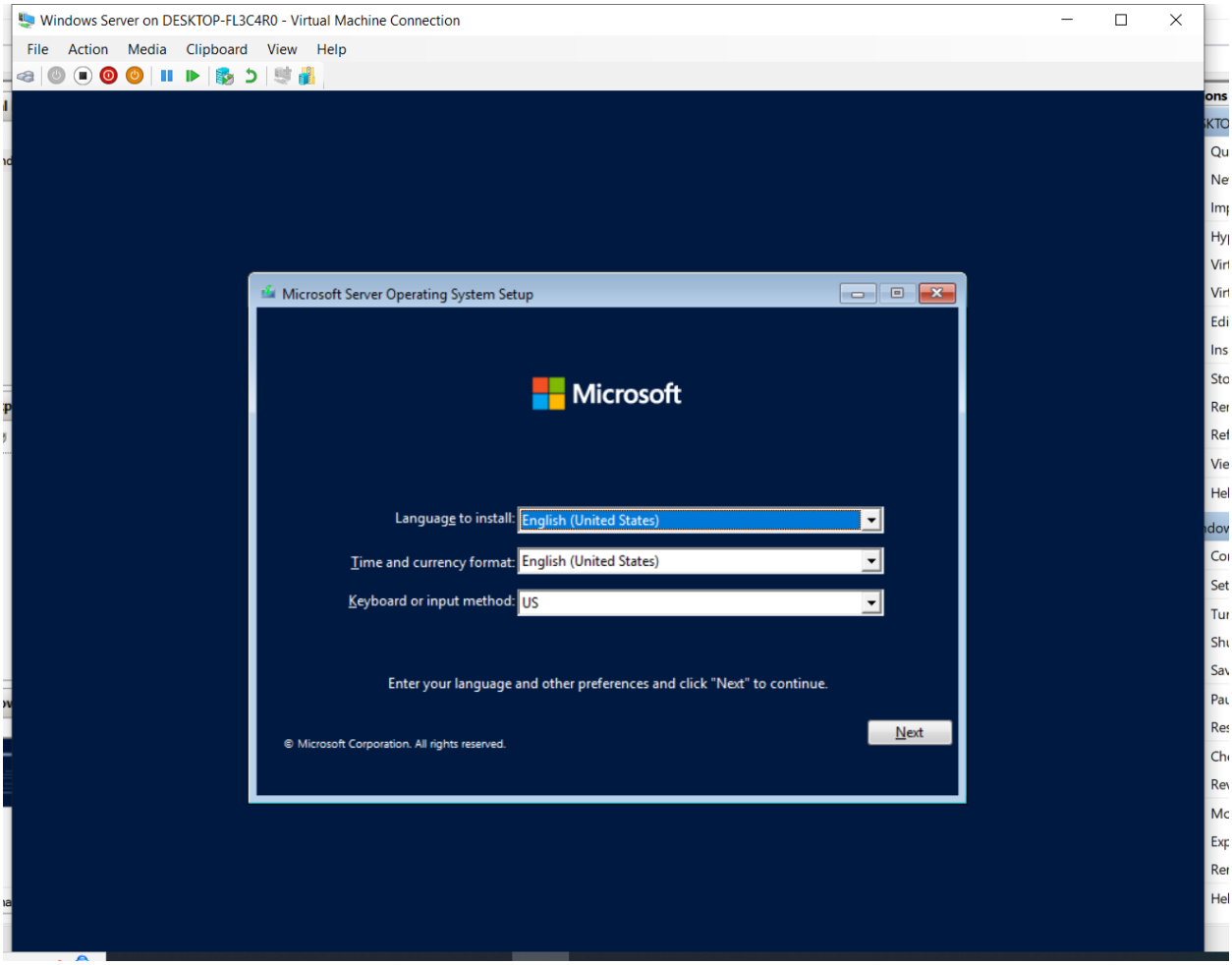

Figure 15: Selecting Language for new OS.

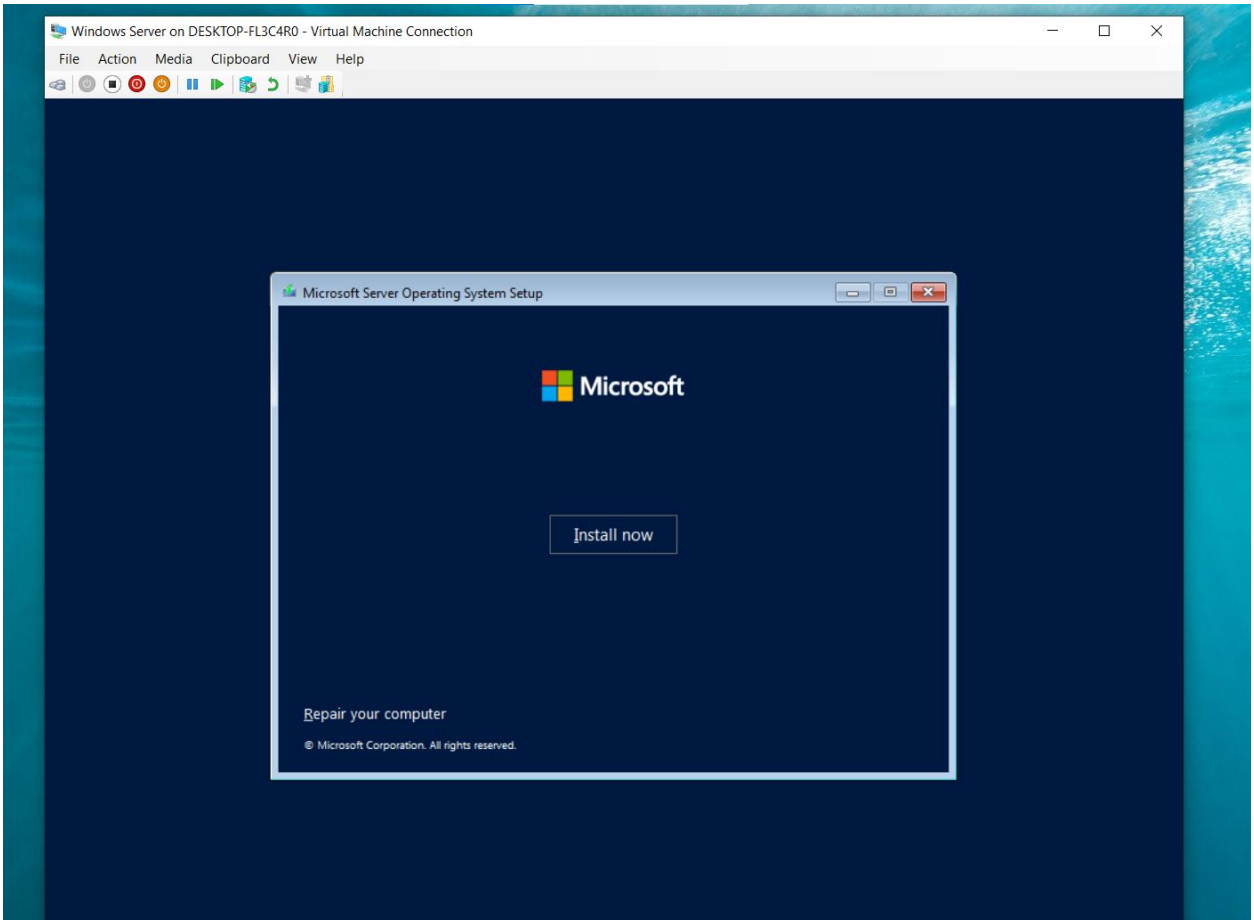

Figure 16: Installation of OS

4.11. Step 11

‘Windows Server 2019 Standard Evaluation’ was selected which is in the last option which has advanced features which supports both GUI and CLI and was followed by licence agreements.

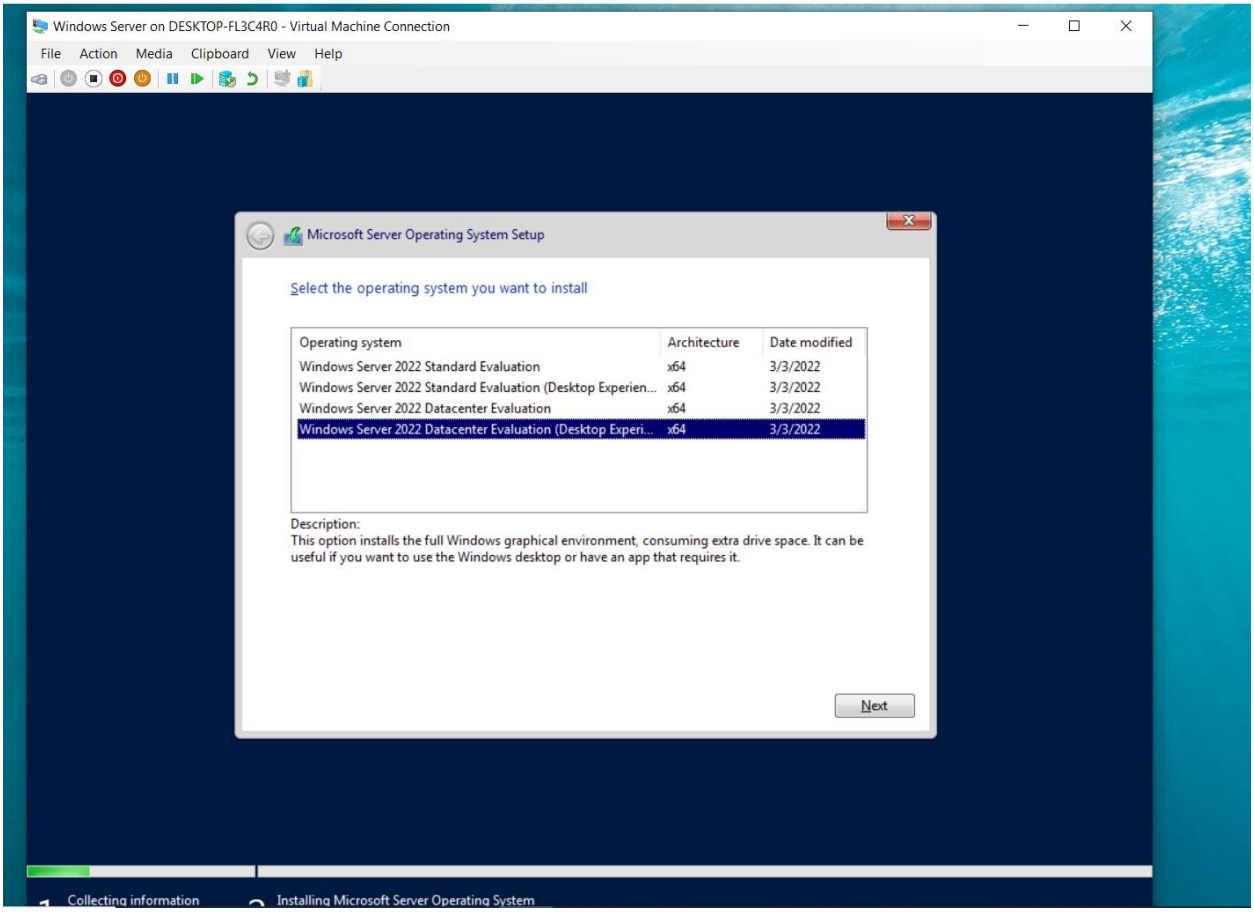

Figure 17: Selecting windows server 2019 standard evaluation.

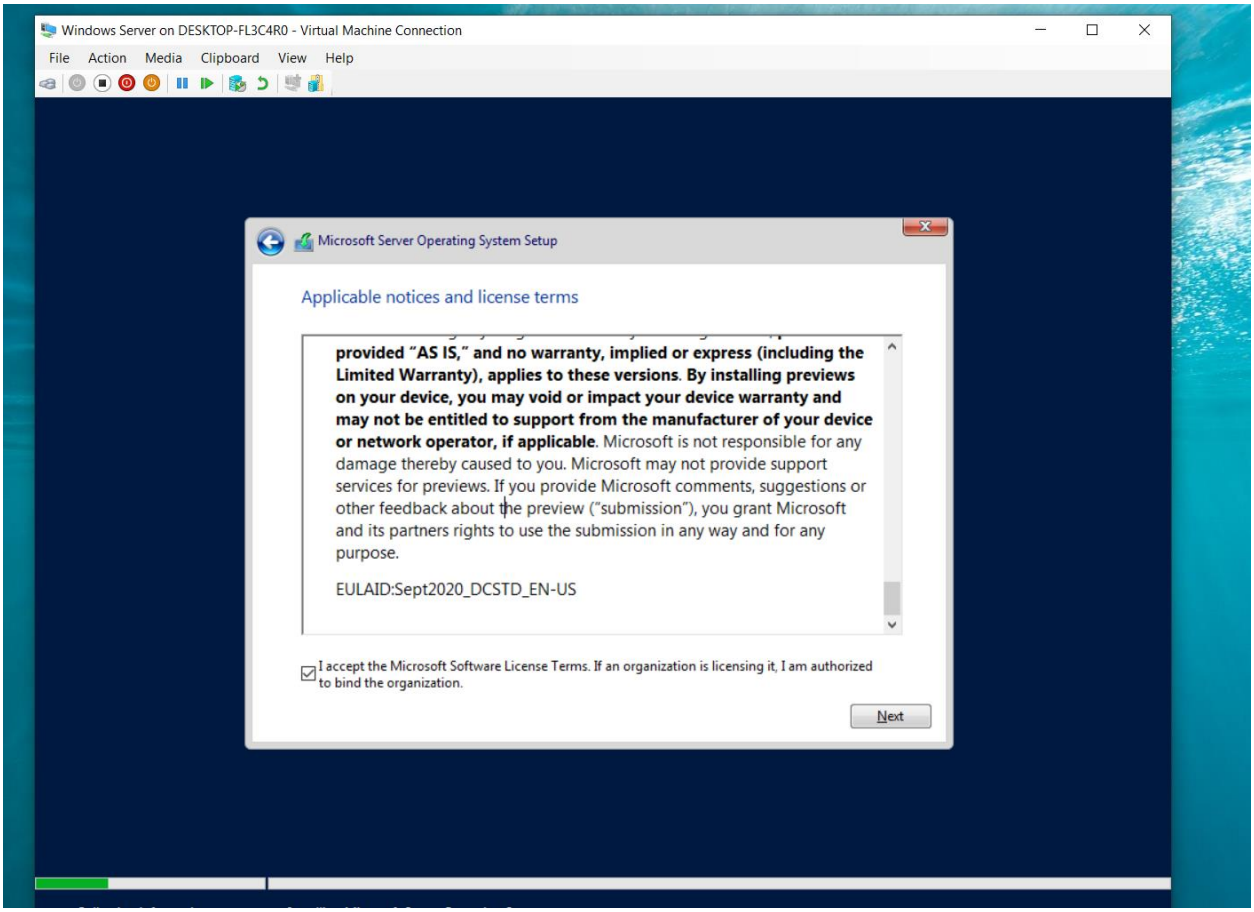

Figure 18: License Agreement

4.12. Step 12

Following that, custom installation was selected to avoid automatic updates on operating system.

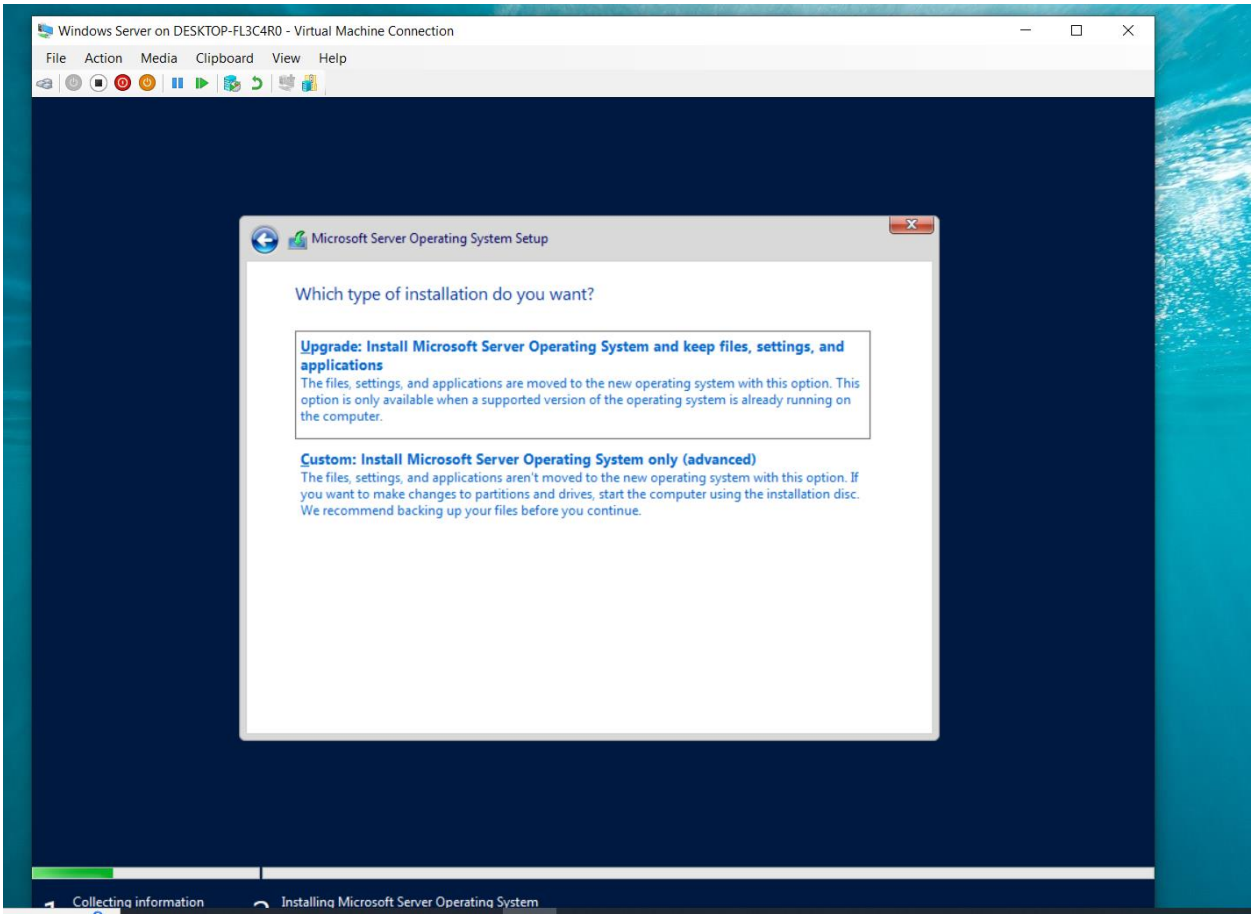

Figure 19: Selecting Custom installation.

4.13. Step 13

Now, unallocated space was selected.

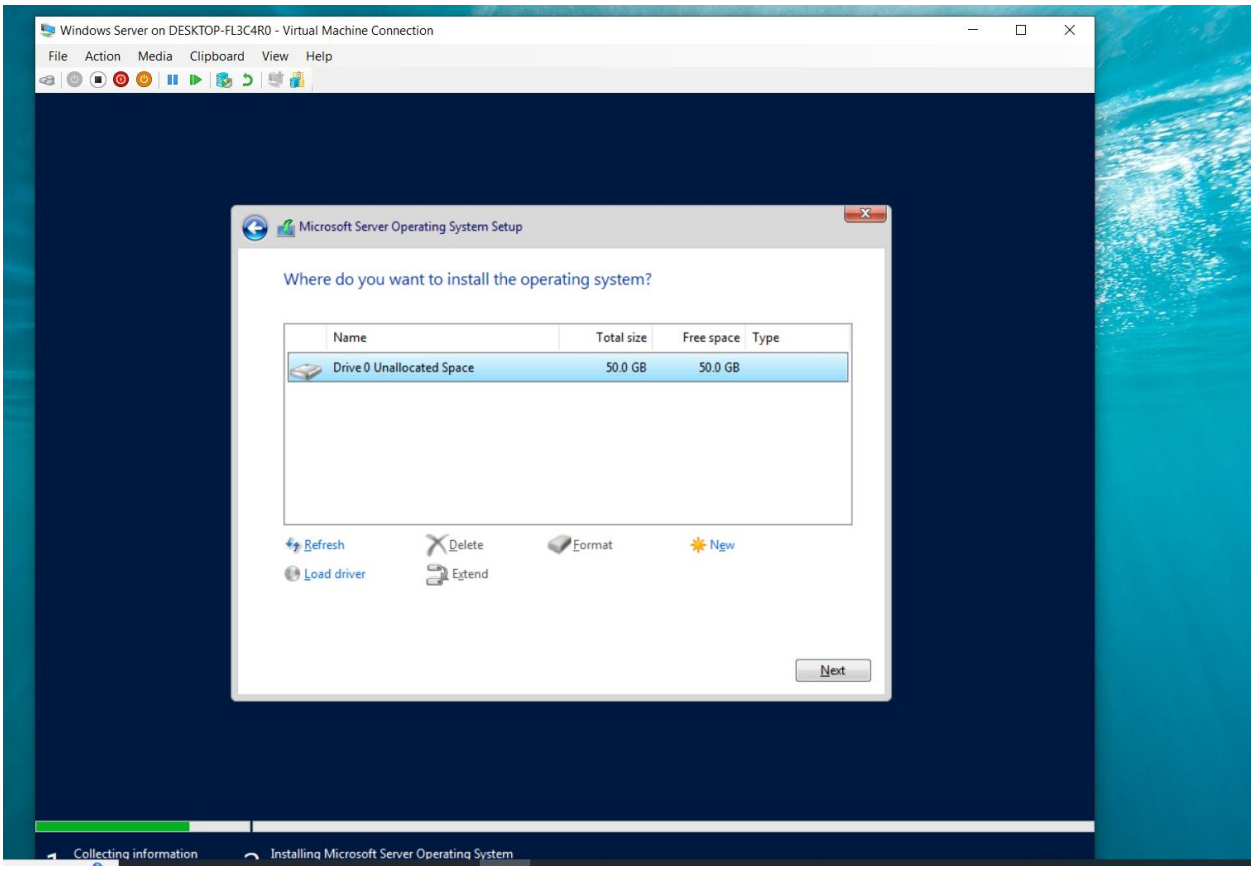

Figure 20: Selecting unallocated space.

4.14. Step 14

With that, installation process was started.

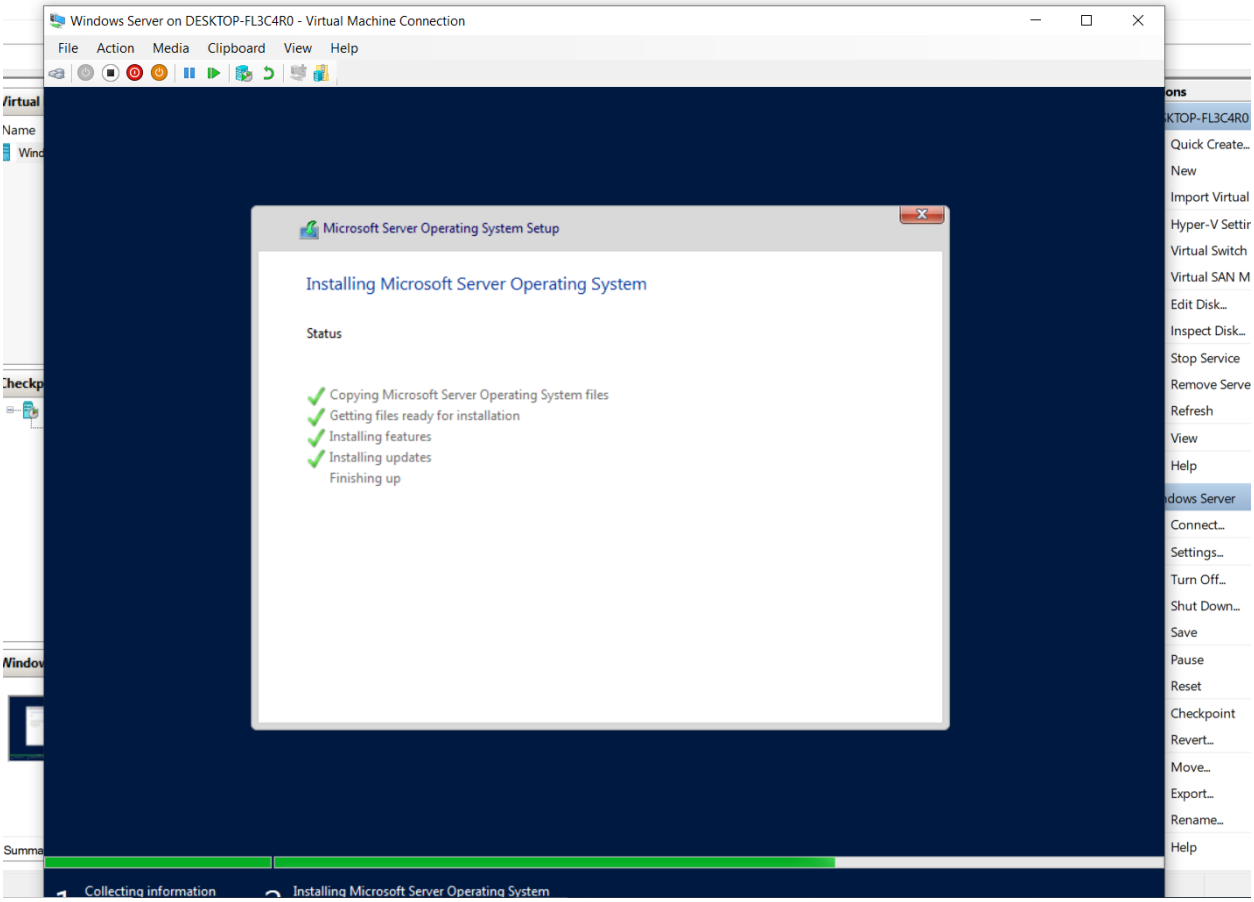

Figure 21: Installation Process

4.15. Step 15

After successful installation of windows operating system, it was prompted to create a new administrator password.

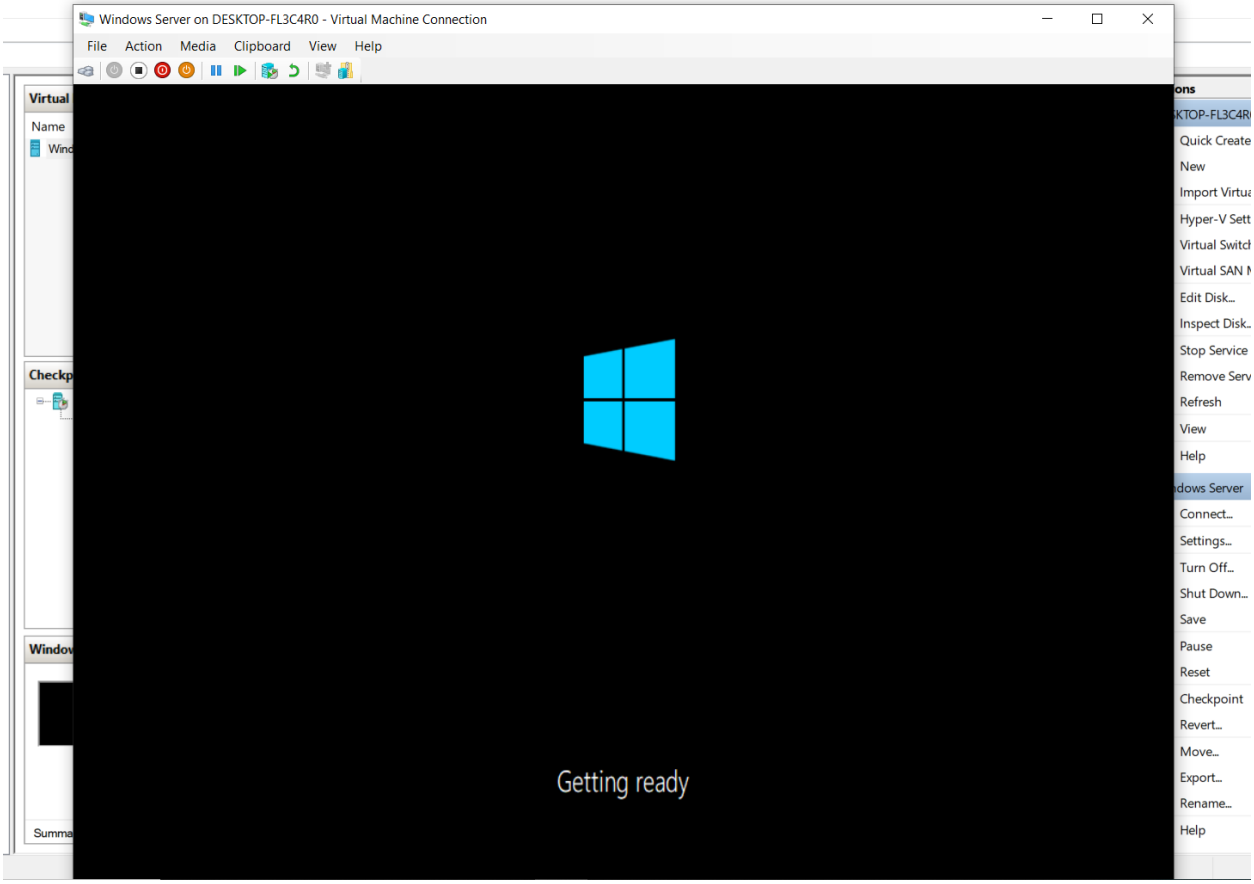

Figure 22: successful installation of OS

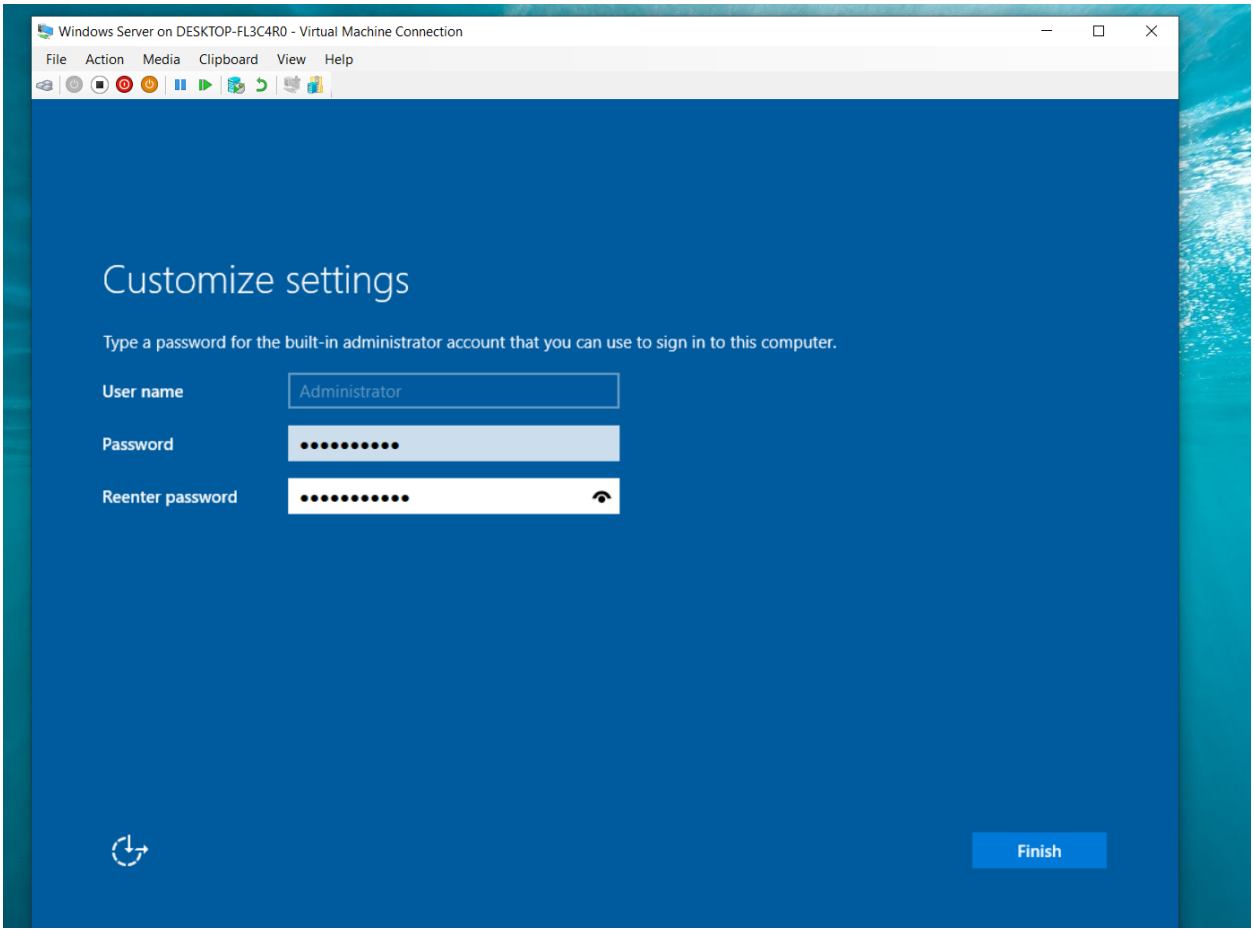

Figure 23: Creating administrator password.

4.16. Step 16

Following that, it was proceed to login into the administrator account with that password.

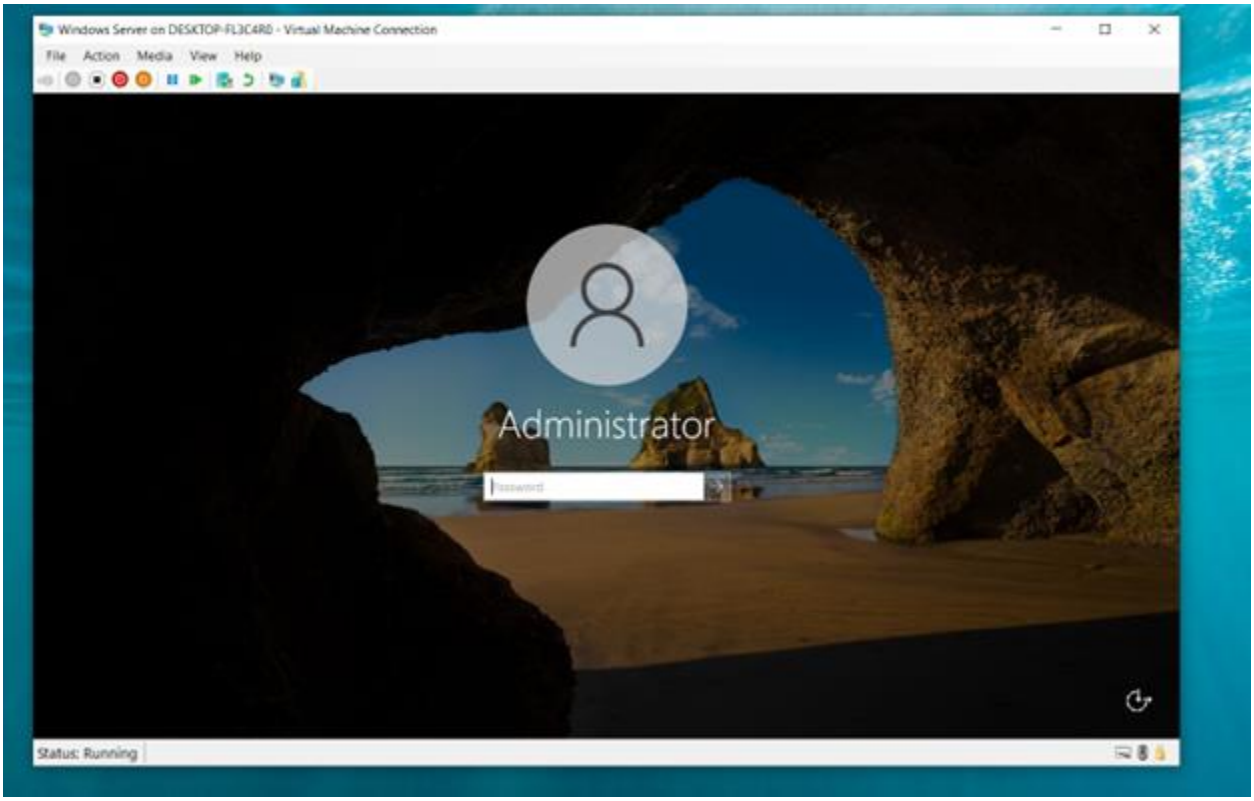

Figure 24: logging on administrator account

4.17. Step 17

With all the steps done carefully, windows server was ready.

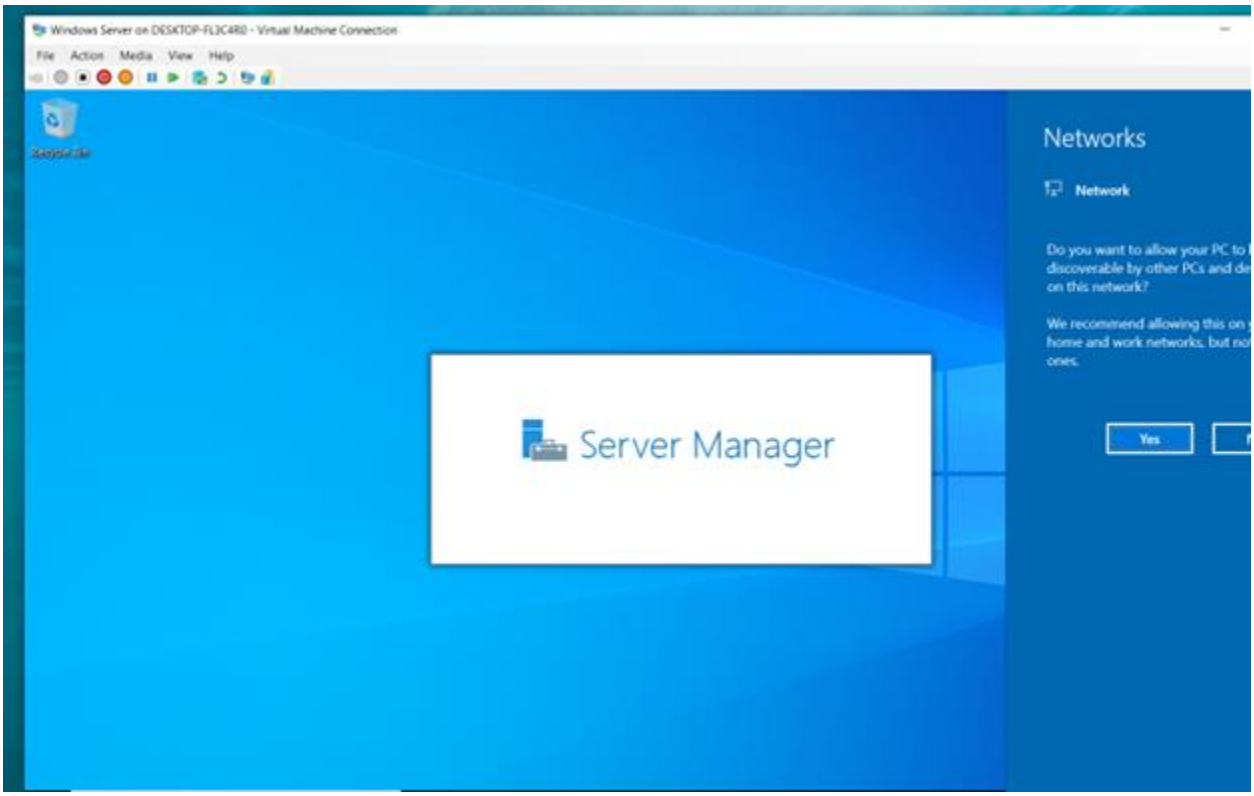

Figure 25: Windows Server

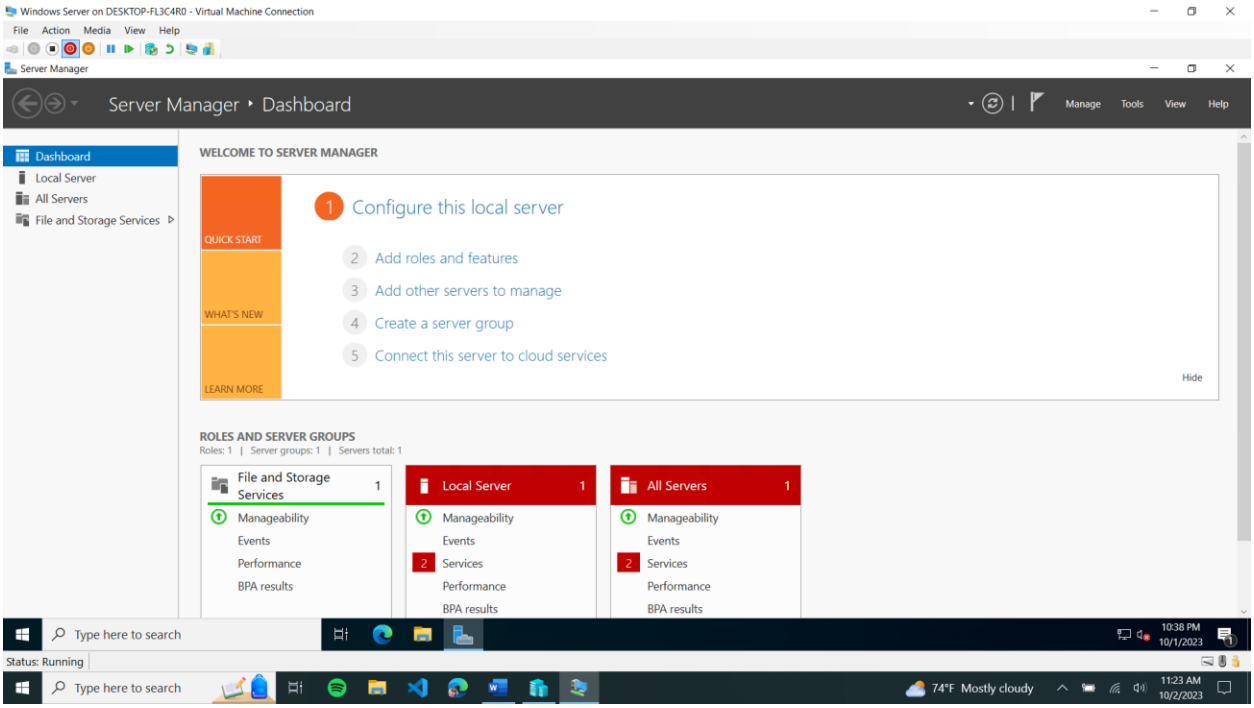

Figure 26: Server Manager

5. Conclusion

This workshop on installing Windows Server on VirtualBox has been a worthwhile and inspiring experience, in conclusion. Throughout this course, we went into the world of virtualization, learning how to use VirtualBox, comprehending the importance of ISO files, and building operating system virtual environments. From the fundamentals of allocating resources to virtual machines to the aspects of installing and running multiple operating systems simultaneously, the session gave us beneficial information. With the help of this newly acquired information, we can now use virtualization for a variety of tasks. As we conclude this workshop, we not only learn the technical knowledge but also the knowledge to navigate the worlds of virtualization and network operating systems successfully and easily.