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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.

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1. Introduction

Windows Server 2022 is the latest operating system provided by Microsoft in managing business servers. It brings performance to modern IT while providing an increase in security for the cloud. In this end, there are the Secured-core server that offers advanced data and workloads protection by protection against ever-evolving threats. Azure enables organizations to securely connect their on-premises servers with cloud services for hybrid solutions that combine cloud scalability with control capabilities on-premise. Besides, it gives support for management to various products developed by Microsoft, such as Windows Admin Centre. This includes Windows Server 2022, a reliable, secure, and agile server platform that will easily support demands that businesses place upon both its on-premises and cloud-based applications.

How did Windows Server 2022 technology come about?

Windows Server 2022 was developed to satisfy the demands of several safe, cloud-ready server solutions in highly data-driven settings. Microsoft had the best security because to advancements like Secured-core Server, which allowed for protection from modern threats. Support for hybrid clouds was also crucial because it enabled integrating Azure services for flexible management across different on-premises and cloud configurations easy. SMB compression for faster data transfers and enhanced support for virtualised workloads are among the performance enhancements. For current technology companies, Windows Server 2022 is flexible since it makes it easier to deploy modern programs and is being used more and more with containers and Kubernetes. (Dauti, 2022)

What is the current state?

In order to learn and comprehend important ideas about the services being provided, users may quickly explore and experience the latest version of Windows Server 2022 through service channels. Furthermore, to protect against online attacks, Secured Core Server and other comprehensive security improvements have been implemented. Furthermore, clients may now employ a cutting-edge, sophisticated Azure connection, allowing them to leverage cloud services for administrative and monitoring tasks. Containers and Kubernetes are also part of the system. With the development of

virtualisation technologies, including the integration of the link in Web services, the system's ability to provide greater connectivity and remote access to systems is further enhanced.

Why do we still need it?

The majority of IT businesses, apps, and services rely on it as their backbone, and it is usually deployed on heavily used servers. Administrative group-related tasks on a network are managed by the server. Files from networked devices are arranged, stored, sent, and received by it.Due of the enhanced security it provides for critical data, many companies decide to keep it on site.

Numerous companies use on-premise servers, which must adhere to stringent regulations. Furthermore, because Windows Server 2022 is compatible with modern programs, has better storage economy, and performs well on mission-critical activities, it can manage a wide range of business requirements. (Aldhamen, 2023)

Do we have alternatives to this technology?

Linux-based Servers (Ubuntu Server, CentOS, Red Hat Enterprise Linux):

Windows Server 2022 Standard Edition does allow you to create Linux virtual machines using its built-in Hyper-V role. Hyper-V is a mature virtualization platform that supports a variety of operating systems, including various Linux distributions such as CentOS, Ubuntu, Debian, etc.

Unix-based Servers (IBM AIX, Oracle Solaris):

Unix attributes in Windows Server 2022 refer to the integration of Unix-like attributes such as UID (User Identifier), GID (Group Identifier), and POSIX permissions into the Active Directory schema. These attributes allow for better interoperability between Unix-based systems and Windows environments.

VMware vSphere:

Organisations may manage a virtual infrastructure across several physical servers using VMware vSphere, a complete virtualisation solution. It provides sophisticated

virtualisation, load balancing, and high availability and offers a variety of operating systems, including Windows and Linux.

Cloud-Based Platforms (Amazon Web Services, Microsoft Azure, Google Cloud Platform):

A cloud platform enables businesses to rent access to computing resources on demand over the internet with pay-as-you-go pricing, rather than buying, installing, and managing their own data centers, servers, and software required to have these resources available on premises.

FreeBSD

FreeBSD is a free and open-source Unix-like operating system descended from the Berkeley Software Distribution (BSD). The first version of FreeBSD was released in 1993 developed from 386BSD and the current version runs on IA-32, x86-64, ARM, PowerPC and RISC-V processors.

TrueNAS

TrueNAS® SCALE is an Open Source Infrastructure solution. In addition to powerful scale-out storage capabilities, SCALE adds Linux Containers and VMs (KVM) so your organization can run workloads closer to data.

What are the pros, and the cons of Windows Server 2022 technology compared to its alternatives?

Pros of Windows Server 2022:

- **Better Integration with Microsoft Products:** Windows Server 2022 is intricately linked with the Microsoft ecosystem, including Active Directory, Office 365, and Azure. It has an advantage in settings that significantly depend on these services because of this.
- **Strong Security Features:** Windows Server 2022 frequently has better enterprise-level support and built-in security features than many open-source competitors (such Linux-based servers).

- **Familiar User Interface:** Organisations that now use Windows may find the switch to Server 2022 simpler because of the recognisable Windows interface, as opposed to Linux or UNIX-based platforms that could need more administrator training.

Cons Compared to Alternatives:

- **Higher Licensing Costs:** Free, open-source alternatives like Ubuntu Server or CentOS, which are popular with smaller or more cost-conscious businesses, are far less expensive than Windows Server 2022.
- **Resource-Heavy:** Windows Server 2022 requires more powerful hardware than lighter alternatives like FreeBSD or Ubuntu Server, which might be prohibitively expensive for smaller organisations.
- **Less Flexibility:** More customisation choices are available with open-source systems like Linux or FreeBSD, whereas Windows Server 2022 has a more rigid, restricted environment that restricts flexibility for organisations or sophisticated users that want substantial customisation.

2. Objective

This documentation on Windows Server 2022 will give a clear look at its role, features, and value in today's server setups. We'll start by covering the core features, like security upgrades such as Secured-core server and TLS 1.3, designed to defend against today's cyber threats. You'll see how Windows Server 2022 integrates with Azure to create a smooth hybrid cloud experience, enabling management across both on-premises and cloud environments. We'll also explore improvements in storage and performance—such as SMB compression for faster data transfer and support for larger databases—showcasing its scalability. This guide will cover edge computing capabilities, explaining how Windows Server 2022 performs well even in remote or low-connectivity areas. By comparing it with alternatives like Linux, Unix, and cloud platforms, we'll highlight where Windows Server 2022 stands out and any potential limitations. Finally, we'll go over its licensing, hardware requirements, and compliance to show why it's a strong choice for businesses needing a secure, scalable, and flexible server solution (topgun, 2024).

Overall, this log's objective was to teach us about the new Windows Server 2022, types of Servers there are, Selecting the hardware we need to run a Server, different types of Windows Servers 2022 editions, difference between the MBR and GPT then instructions to installation and post installation. So basically, most of the emphasis was given to Windows Server 2022 so we can have a very in-depth understanding about the operations we will be doing in the future and why it is still used and the importance of it.

Required Tools and Concepts

Hardware Requirements:

Processor: intel: Up to Core i7-12700H

RAM: Intel: Up to 32GB DDR4-3200 RAM

An ethernet adapter capable of at least 1 gigabit per second throughput Compliant with the PCI Express architecture specification.

GPU: Up to RTX 3070 Ti (8GB GDDR6 VRAM)

Network Interface: An Ethernet or Wi-Fi adapter for networking

Software Requirements:

VirtualBox

Windows Server 2022 ISO

Networking Configuration Tools

PowerShell

Basic Knowledge and Key Concepts

- **Basic Virtualization Knowledge:**

Virtualization allows a single physical computer to run multiple virtual machines (VMs) with separate operating systems, optimizing resources and reducing costs. It includes

server, desktop, network, and storage virtualization, providing flexibility and scalability essential for modern IT environments, especially in cloud computing.

- **Familiarity with VirtualBox:**

VirtualBox is a free tool that lets you create and run virtual machines on your computer. It's great for testing different operating systems or software setups without affecting your main system.

- **Windows Server Basics:**

Windows Server is Microsoft's operating system for managing servers, designed to handle tasks like file storage, networking, and security for businesses. It allows multiple users to connect, share resources, and manage applications in a secure environment.

- **Network Basics:**

Network basics involve connecting computers and devices so they can communicate and share resources, like files or internet access. Networks can be as small as two devices or as large as the internet, using cables, Wi-Fi, or other technologies to link everything together.

- **Windows Installation Process:**

The Windows installation process involves booting from a setup disk or USB, following on-screen instructions to select language and settings, and then letting the installer copy files and set up Windows on your computer. Once complete, you'll configure basic settings, and Windows will be ready to use.

- **Command Line and PowerShell Basics:**

Command Line and PowerShell are tools for typing commands to control and manage your computer. The Command Line lets you perform basic tasks like navigating files, while PowerShell is more advanced, with powerful commands for automating tasks and managing system settings.

Steps of Replicate

Download and Install VirtualBox

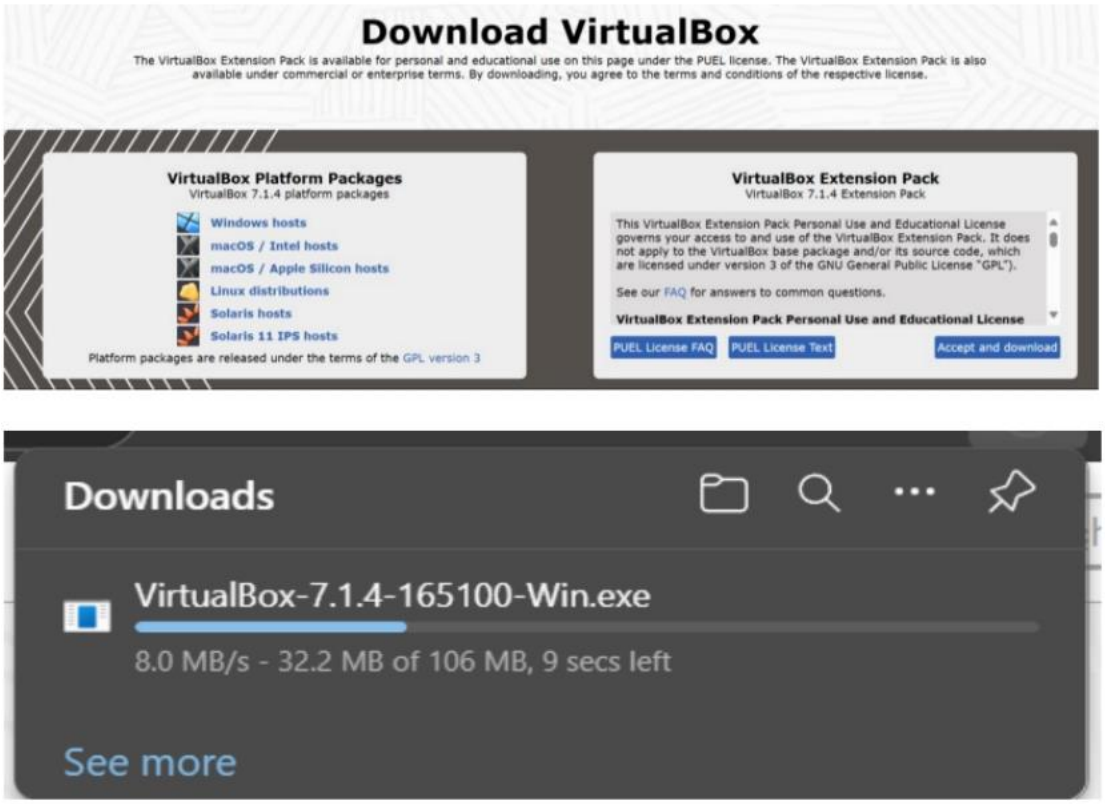

Figure 1Visiting official virtual box website and downloading

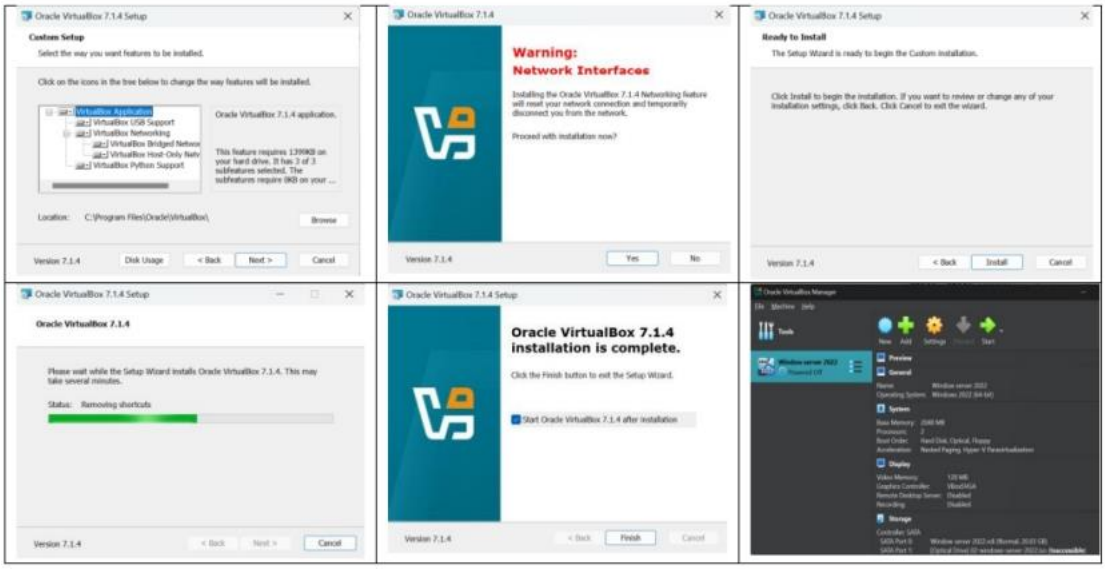

Figure 2: Installing VirtualBox

Set Virtual Machine Name in my case it is Windows Server 2022

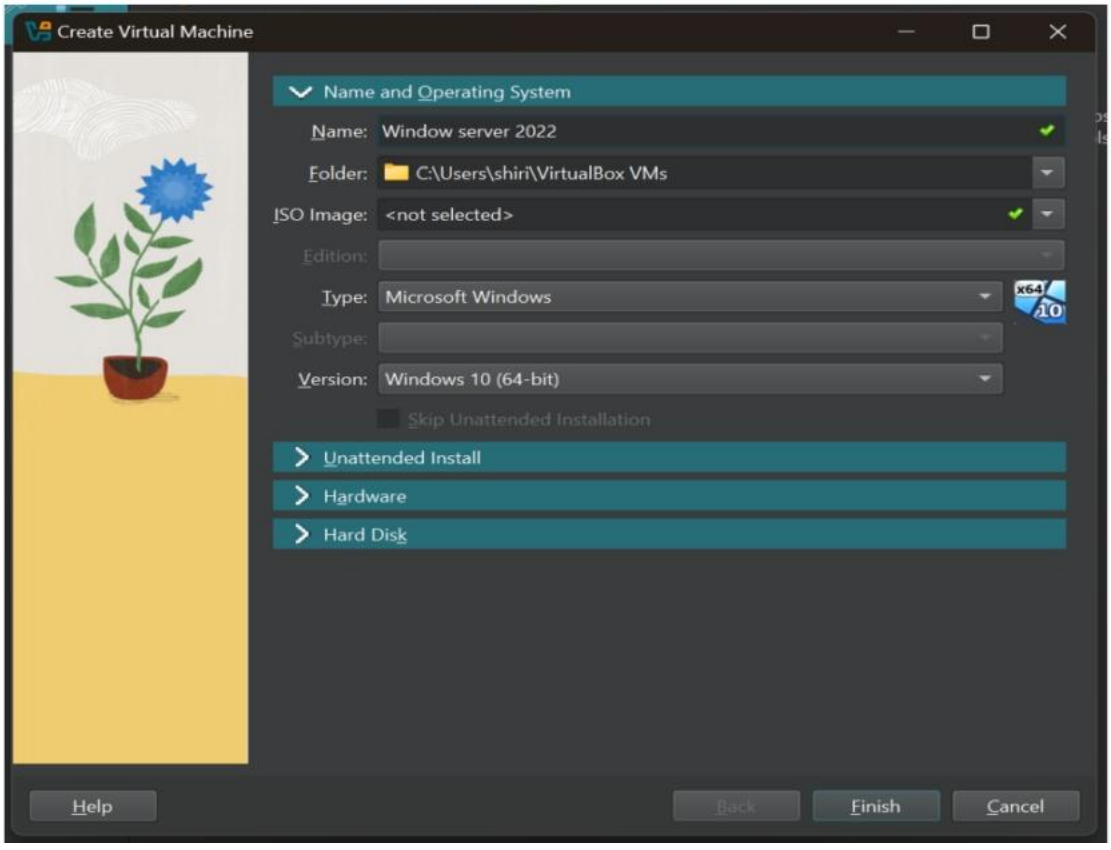

Figure 3 Creating name Windows Server 2024

Select Microsoft Windows from the type of dropdown, then choose the 'Windows Server 2022 (64-bit)' version. Next, select the folder where you want to store the installation files, and in the ISO image section, choose the previously downloaded ISO file

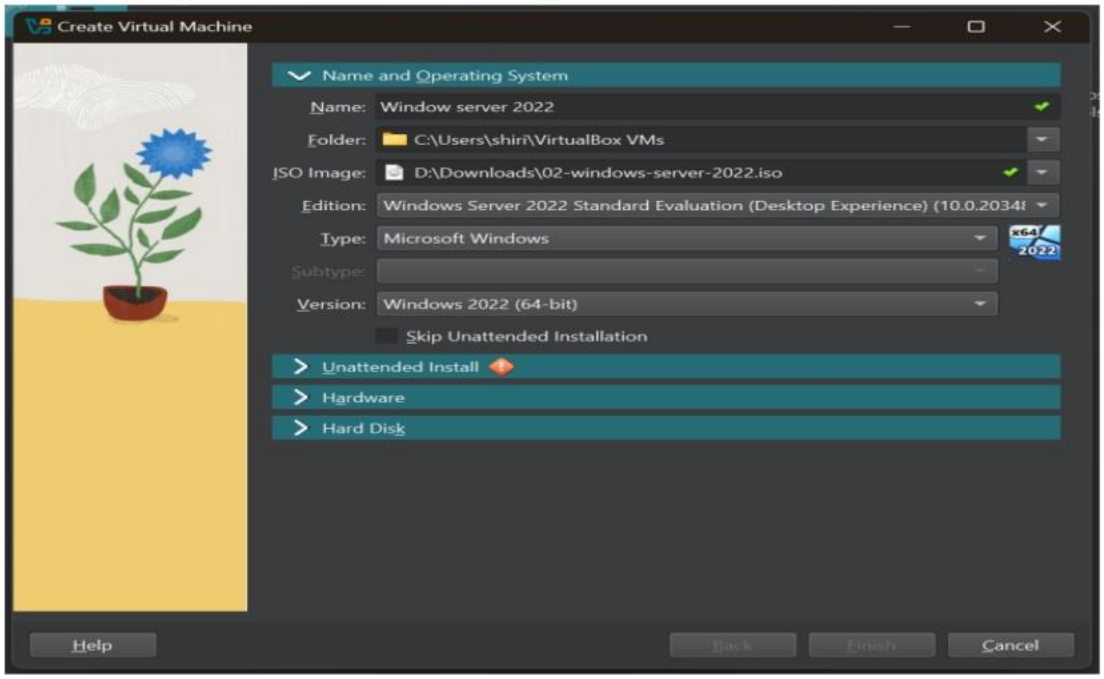

Figure 4 Selection of required field

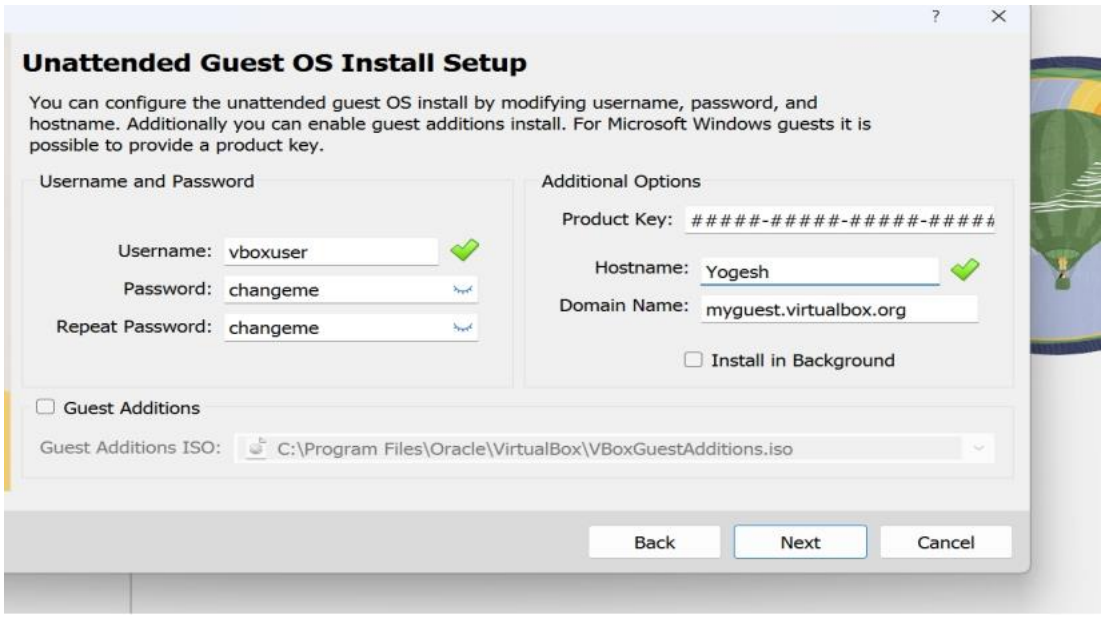

Figure 5: Selection of username

Decide how much memory (RAM) to provide the virtual machine. At least 4GB of RAM should be installed, though you can add more based on your system's capability

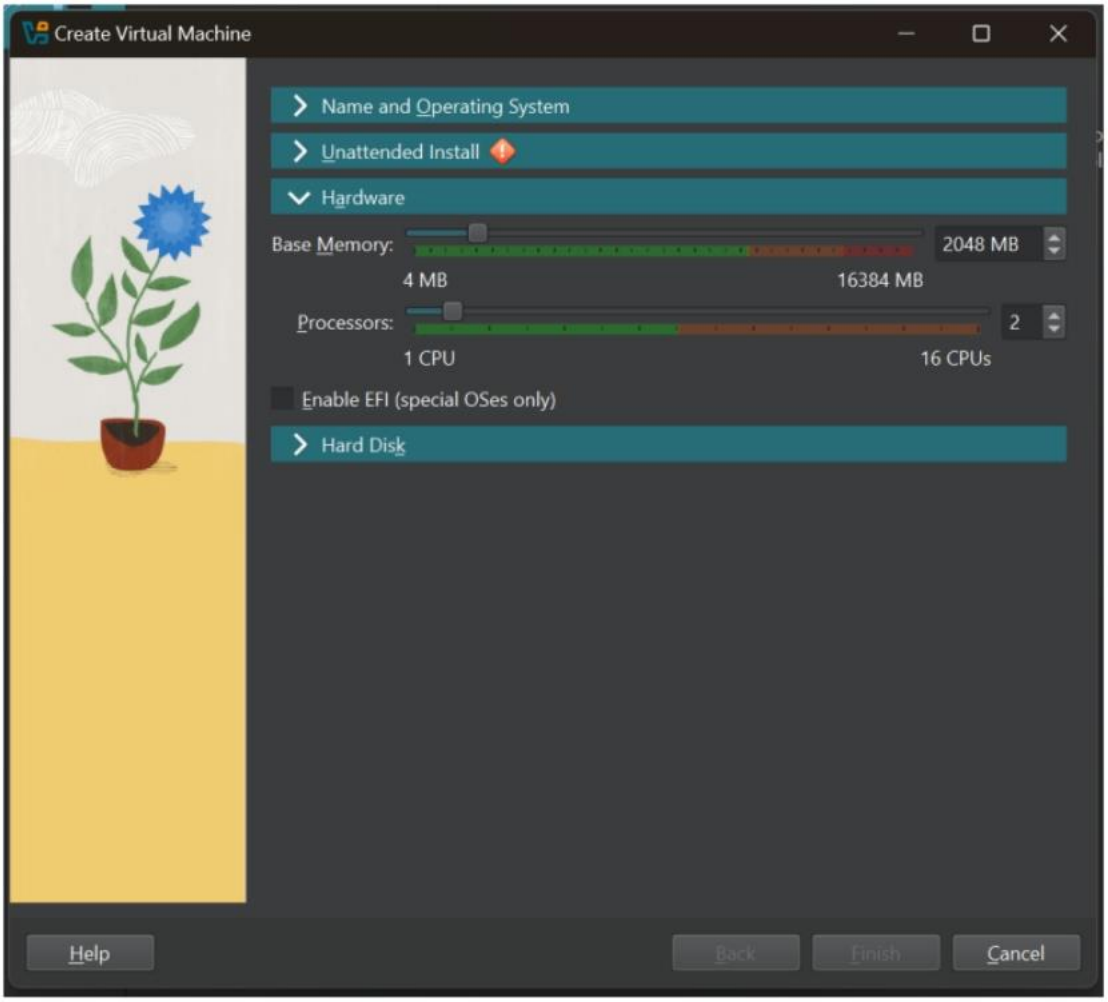

Figure 6: Allocate Memory (RAM)

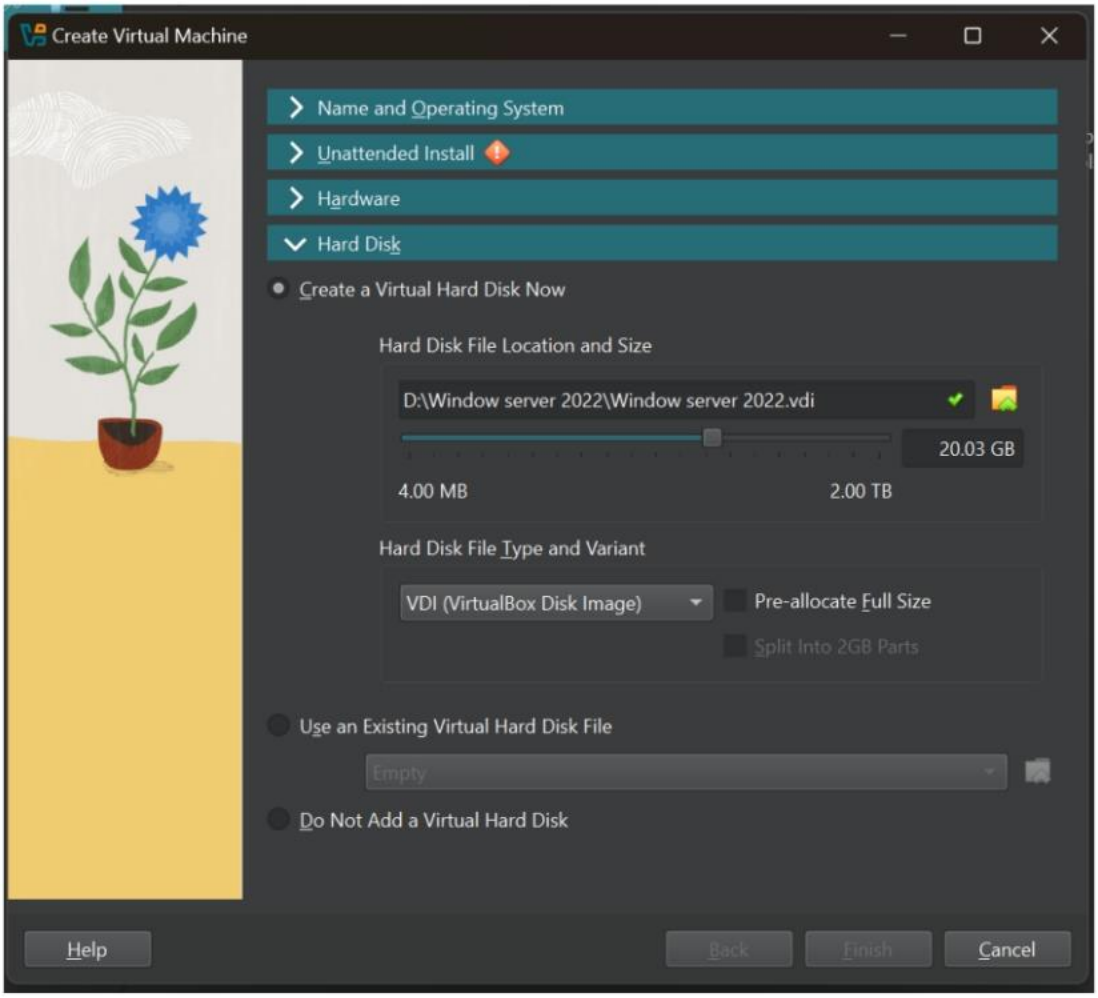

Figure 7 Allocating hard disk

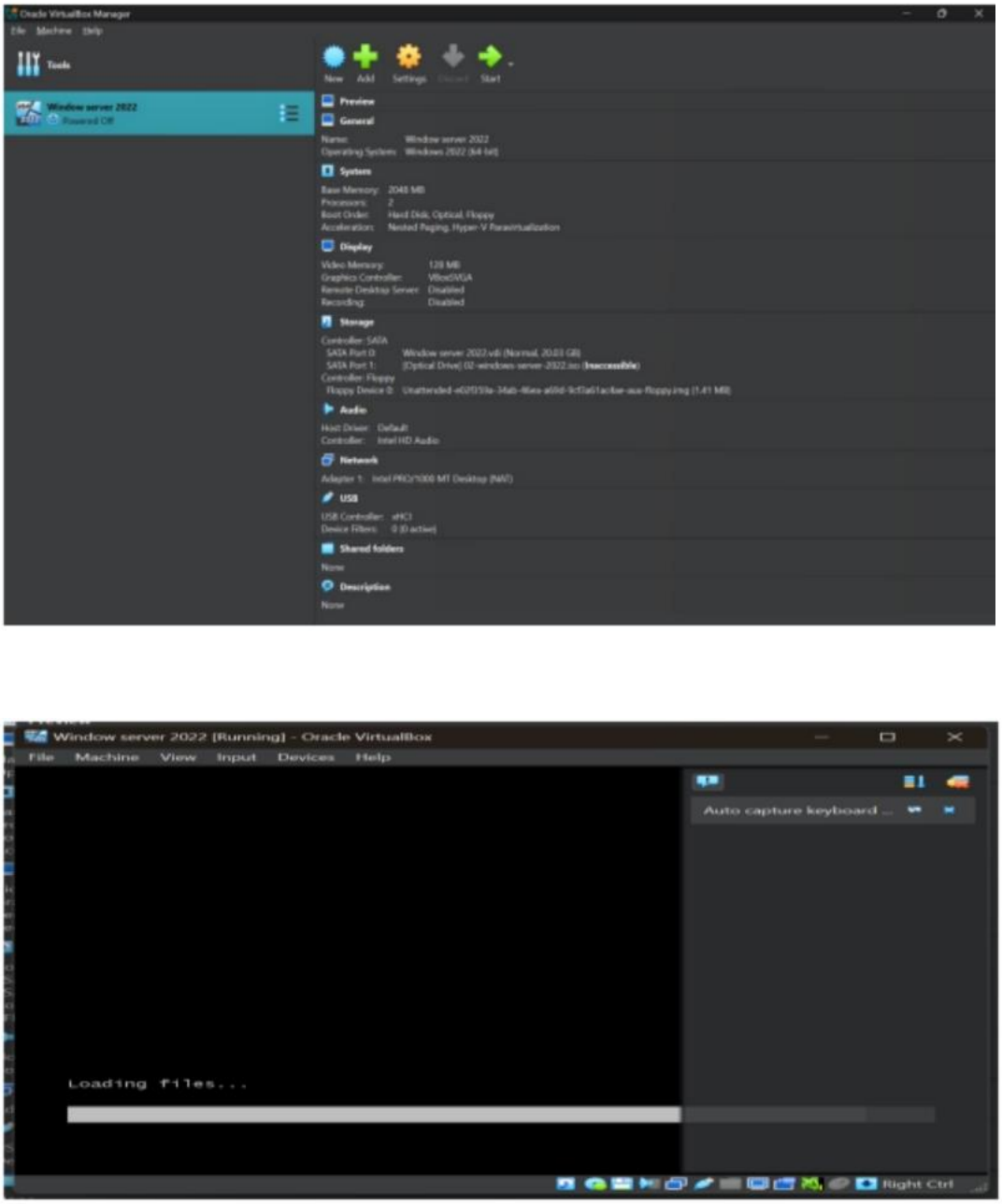

Figure 8 Starting window server

Once the installation is complete, you now have a fully functional virtual machine running Windows Server 2022 within VirtualBox. You can start using it for various tasks like setting up server roles, creating a network environment, and testing different configurations.

3. CONCLUSION

Windows Server 2022 stands as a powerful, security-focused solution for modern business servers, blending on-premises and cloud functionalities through Azure integration. This new iteration brings advancements in data protection with features like Secured-core server and TLS 1.3, addressing today's cyber threats. With strong hybrid cloud support, it allows businesses to leverage Azure services while managing local resources effectively, especially for virtualized and containerized environments. Its compatibility with Microsoft products like Windows Admin Center and seamless user experience make it ideal for organizations deeply embedded in the Microsoft ecosystem. However, compared to open-source options, it has higher licensing costs and demands more hardware resources, potentially challenging smaller companies.

The documentation also discusses alternatives, such as Linux-based servers and cloud platforms, providing context for choosing the right server solution. In short, Windows Server 2022 is a robust and scalable choice, especially for businesses that need high security, seamless integration with Azure, and support for mission-critical applications. (Portnoy, 2061)

4. References

Aldhamen, M. F., 2023. *Windows Server Management*. s.l.:s.n.

Dauti, B., 2022. *Windows server 2022 Administration Fundamentals The Third edition*. s.l.:s.n.

Portnoy, M., 2061. *Virtualization Essintials*. s.l.:Skybex.

topgun, 2024. *topgun*. [Online]
Available at: https://www.topgun-tech.com/end-of-service-life/microsoft/
[Accessed 11 11 2024].