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Table of Contents

Table of Figures

1. Windows Server 2022 Active Directory Domain Services Setup

1.1 Aims and Objectives

To successfully installing and configuring Active Directory Domain Services on a Windows Server 2022 environment. Starting from the initial setup in Server Manager, adding roles and features, and progressing through the deployment configuration

1.2 Required Tools and Concepts

Tools:

1. Virtual Box
2. Windows server 2022 Virtual machine
3. Server manager Dashboard
4. PowerShell
5. Internet connection

Concepts:

1. Server Manager
2. Role based installation
3. Roles and Features
4. Active Directory
5. Active Directory Domain Services (ADDS)
6. Group Policy
7. DNS (Domain Name System)
8. PowerShell

Aayush Wanem Limbu

1.3 Adding Roles and Features to our Windows Server

- **Active Directory:**

Active Directory is a proprietary directory service developed by Microsoft® to provide secure access to corporate networks. Active Directory stores information related to user accounts, computer objects, groups, policies, and other resources on the network. It also provides an efficient way for administrators to manage the security settings of their organization's IT infrastructure. AD was developed to manage the authentication and authorization of users and machines on a **Windows domain network**. (Delinea, 2023)

To make our windows server 2022 virtual machine a Active Directory Domain Services server we first need to :

1. Login to Windows server 2022 as an administrator and open the Server Manager as shown below:
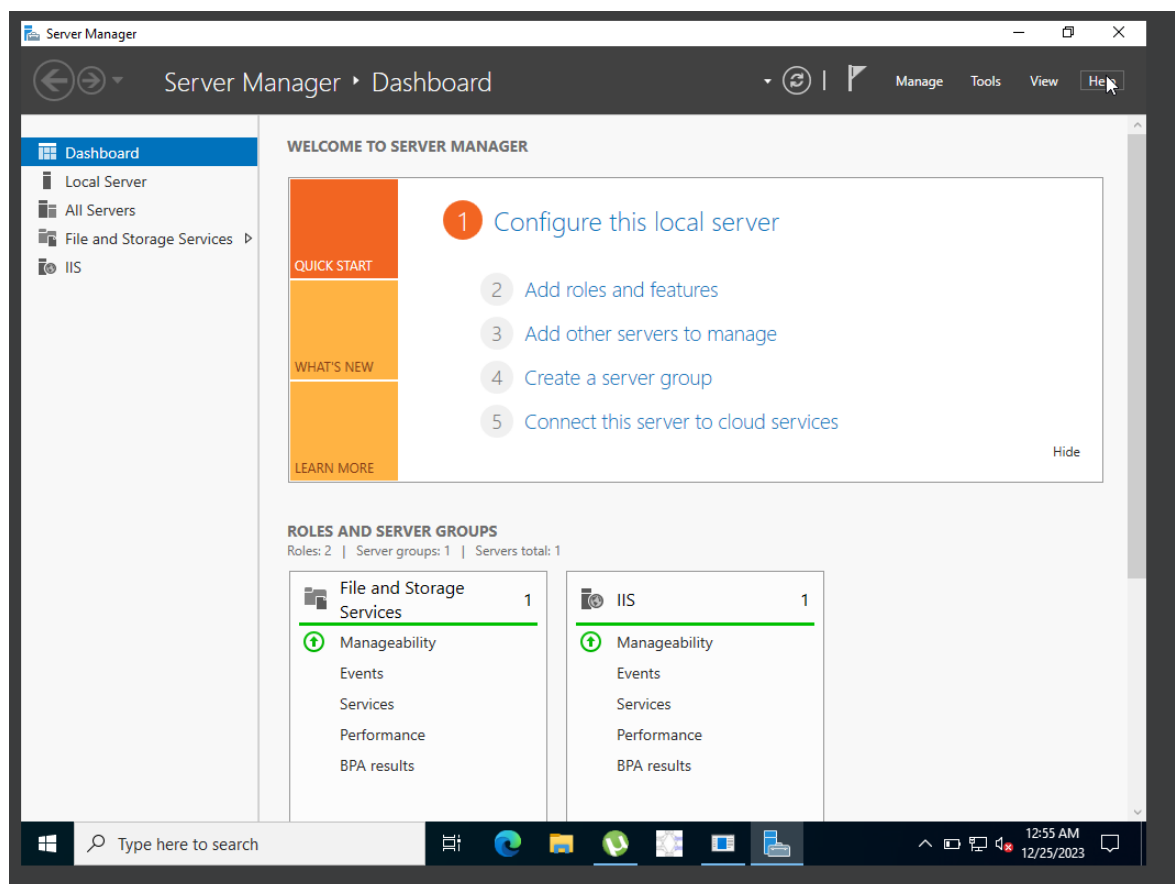

Figure 1 Server Manager

Aayush Wanem Limbu

2. After opening the server manager dashboard, we need to click on the add roles and features option, like on the image below:
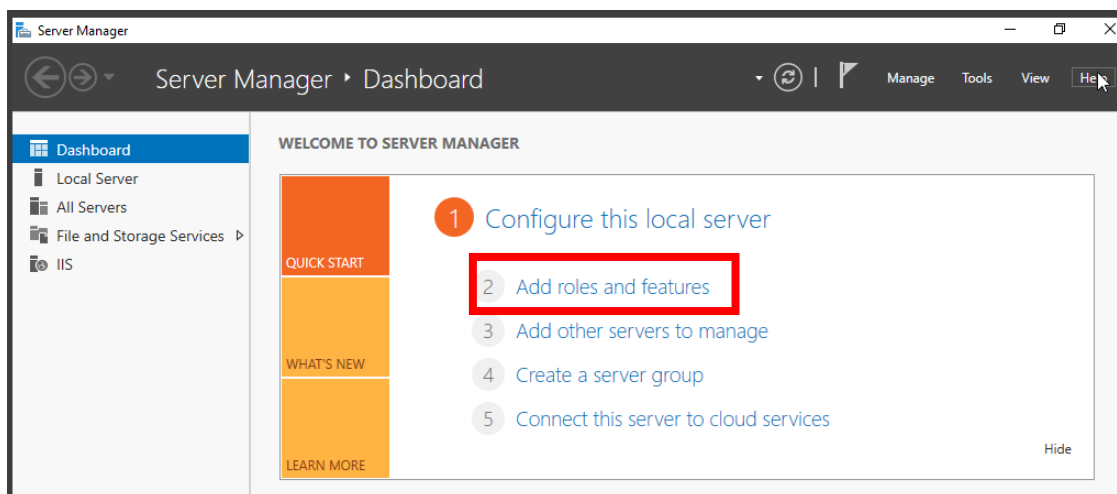

Figure 2 Add roles and features

3. After clicking on the add roles and features option, this will now open the Add Roles and Features Wizard click next :

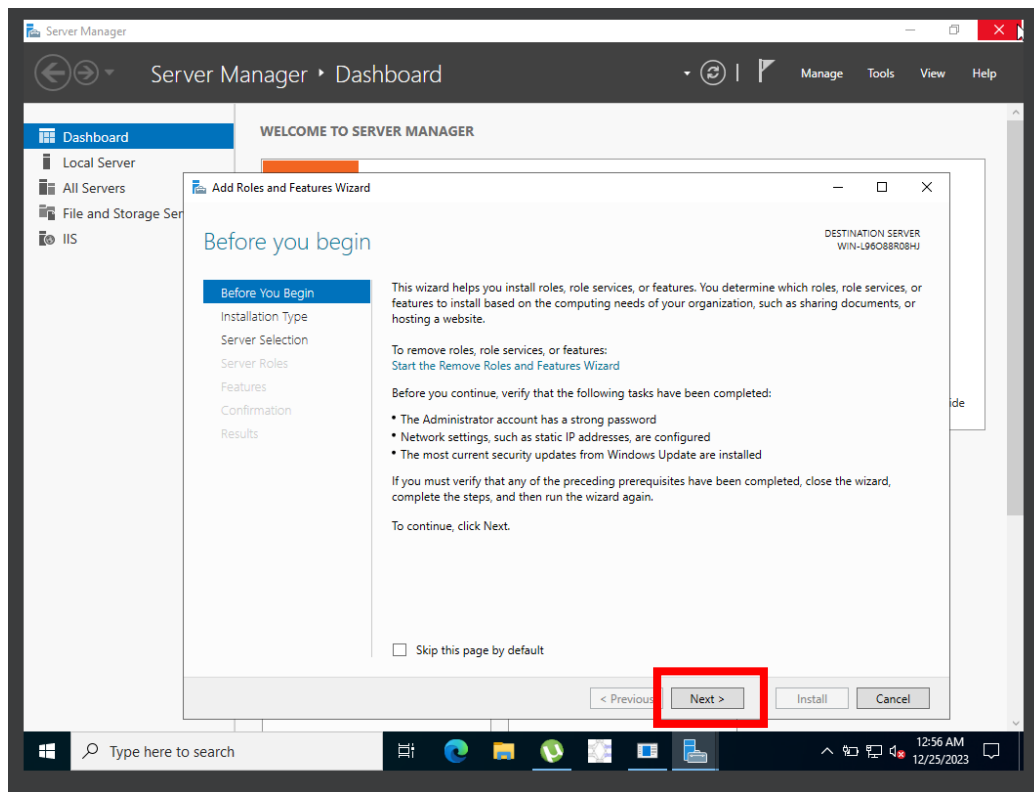**Figure 3 Add roles and features wizard.**

Aayush Wanem Limbu

4. After clicking next we will be asked to select the installation type, we have to select role-based or feature-based installation and click next.
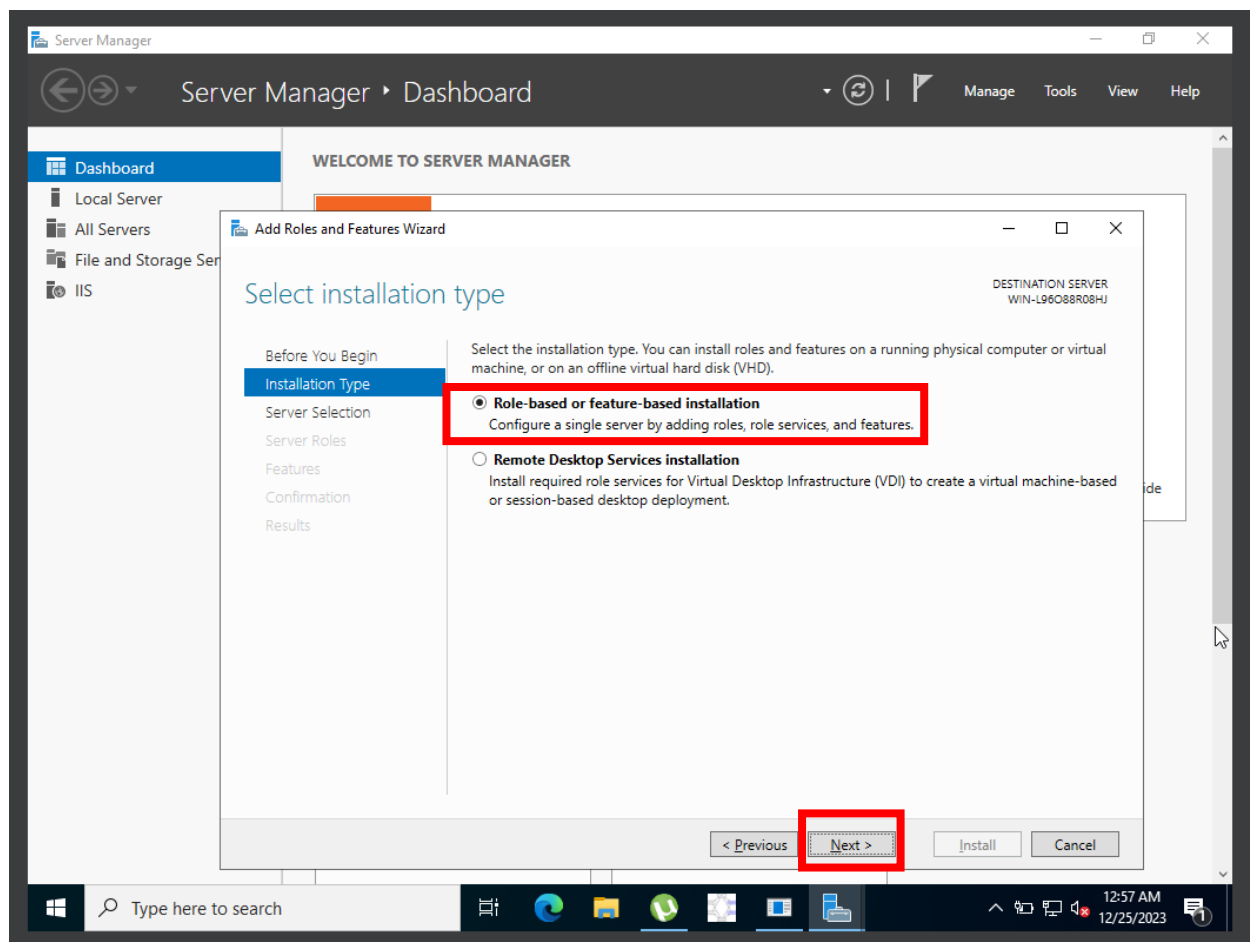

Figure 4 Selecting Installation type.

5. After that we have to select the destination of our server, since we only have one server in our server pool it shows us only one server i.e., which is our current server. In this step we have to select "Select a server from the server pool" option and select the name of our server and click next.
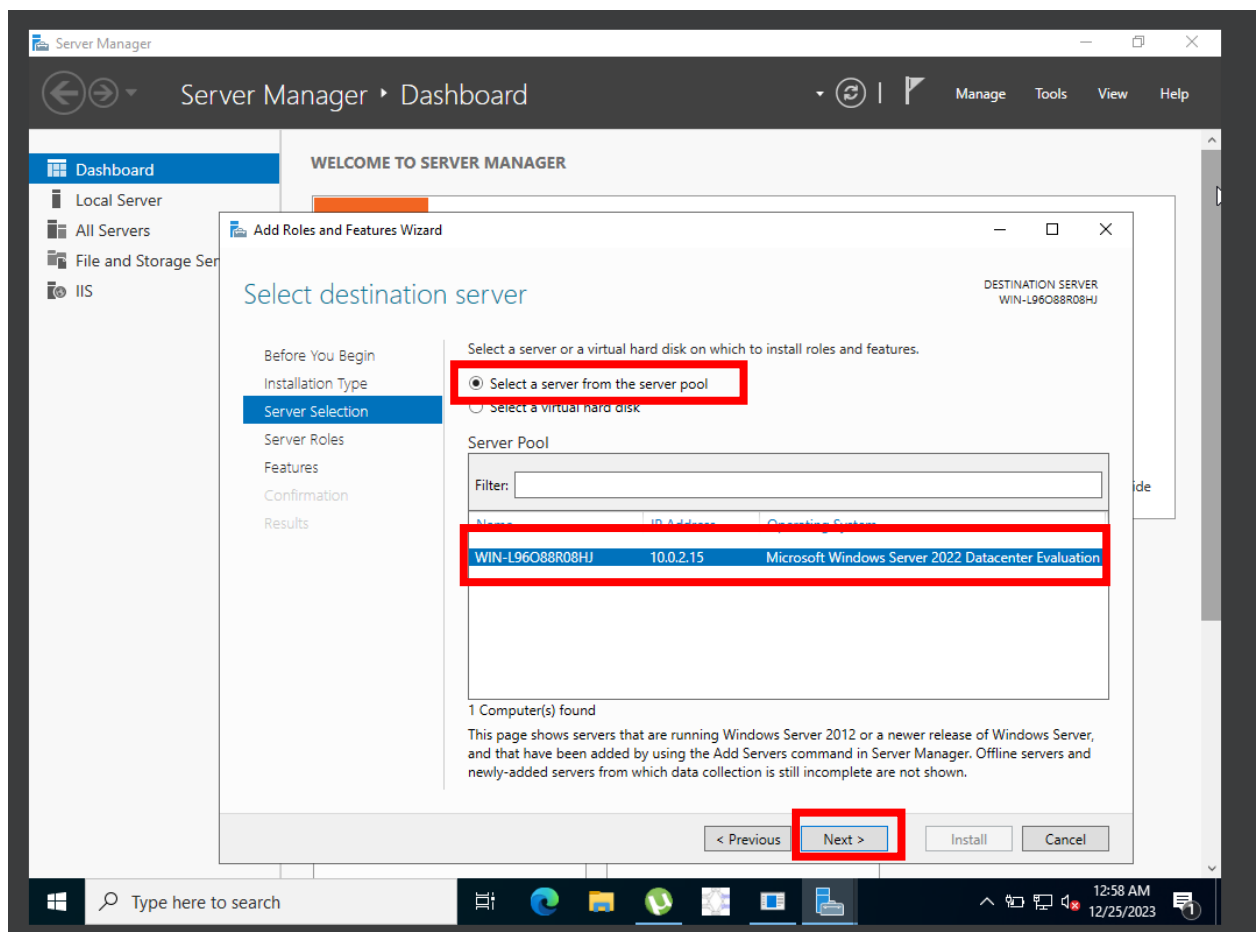

Figure 5 Selecting Server from the server pool.

6. After clicking next, we will be asked to select server roles. Here we can see the list of all the roles that is permitted by Microsoft and can be given to the Microsoft server 2022. We have to check mark on the Active Directory Domain Services box and click next.

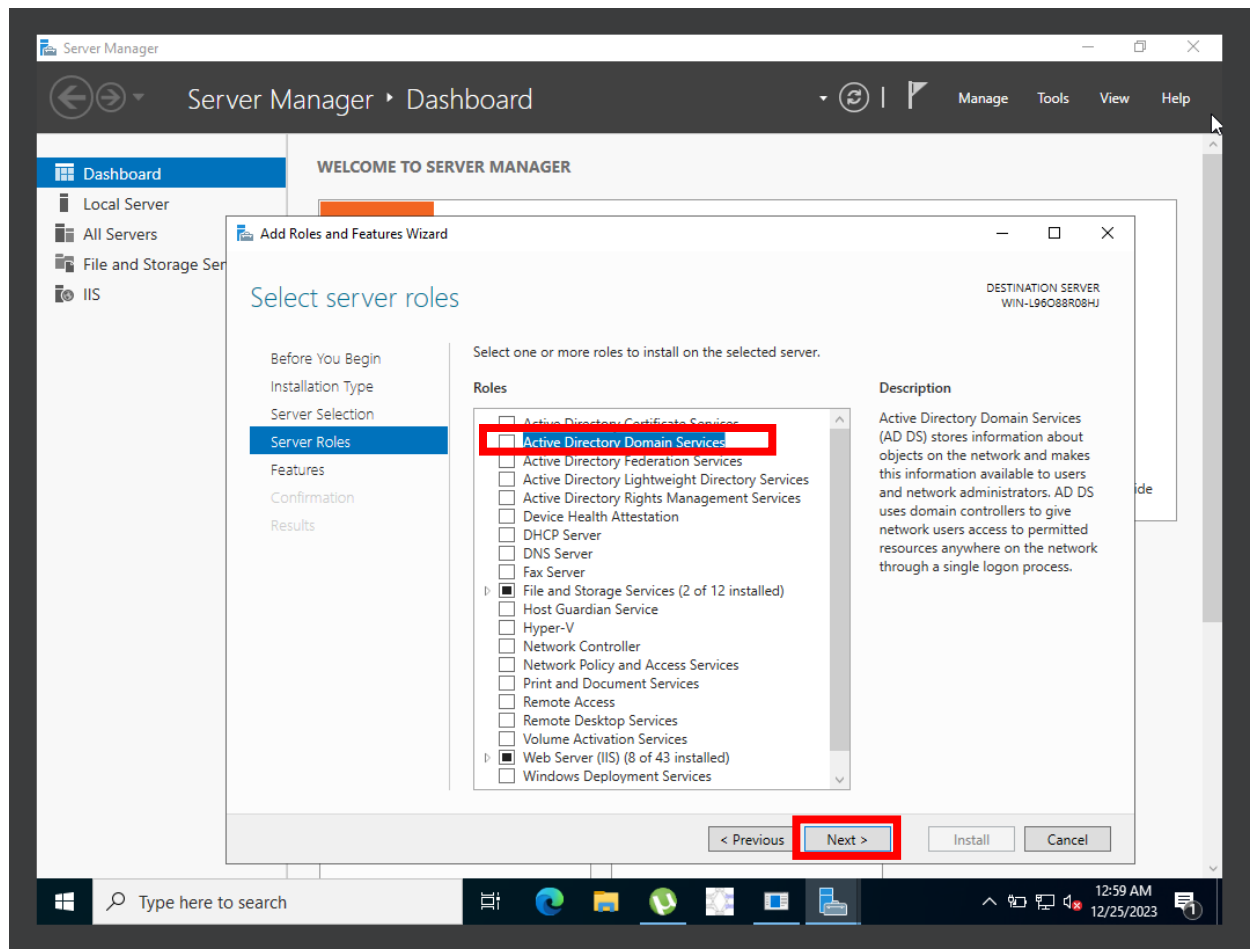**Figure 6 Adding server roles.**

7. After tickmarking the ADDS option a new window will pop up showing all the features and tools that we will need to add we just have to click on the add features options.
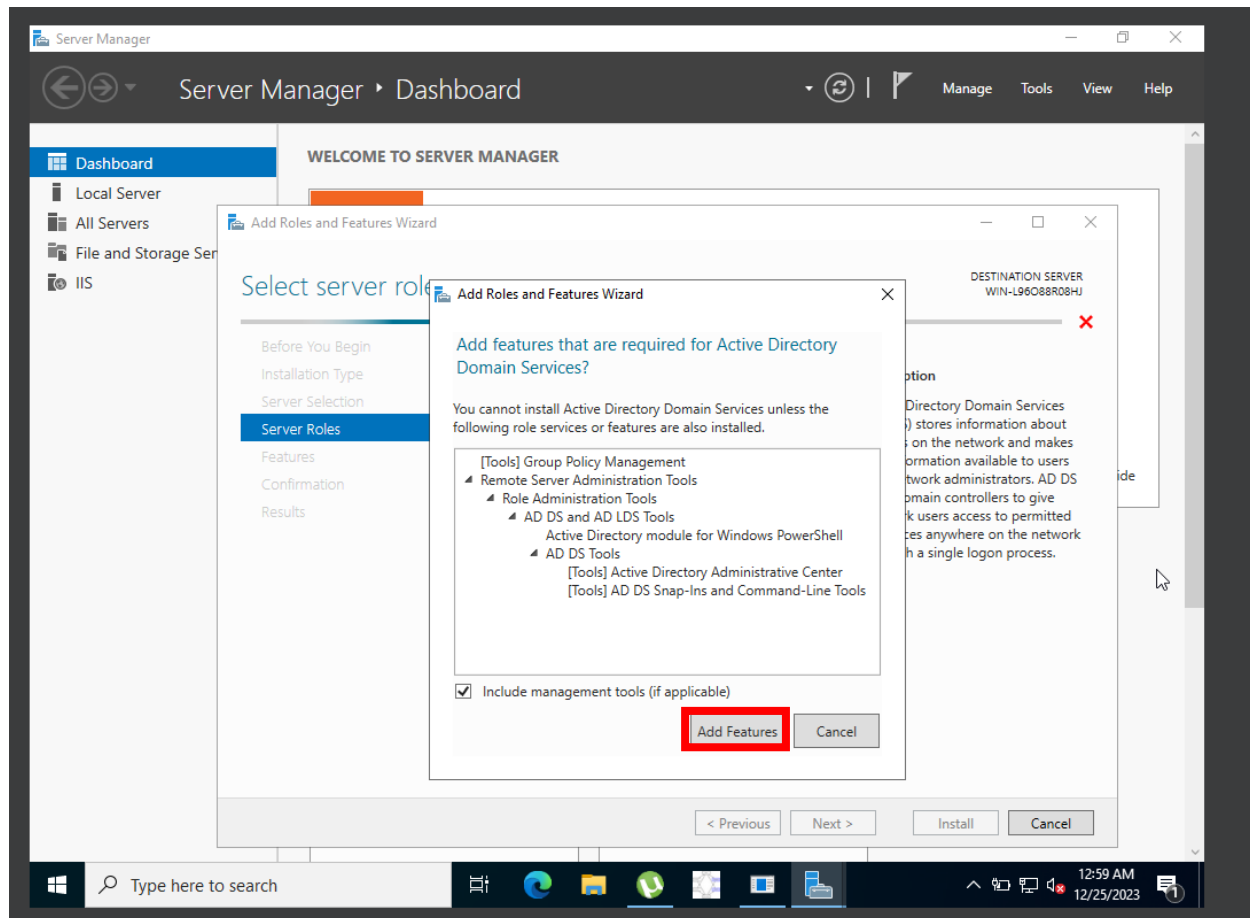

Figure 7 Adding features for ADDS.

8. After clicking add features option the previous add roles and features window will be shown but this time the Active Directory Domain Services option will be ticked this indicates that in our server active directory domain services has been added. We have to now click next.
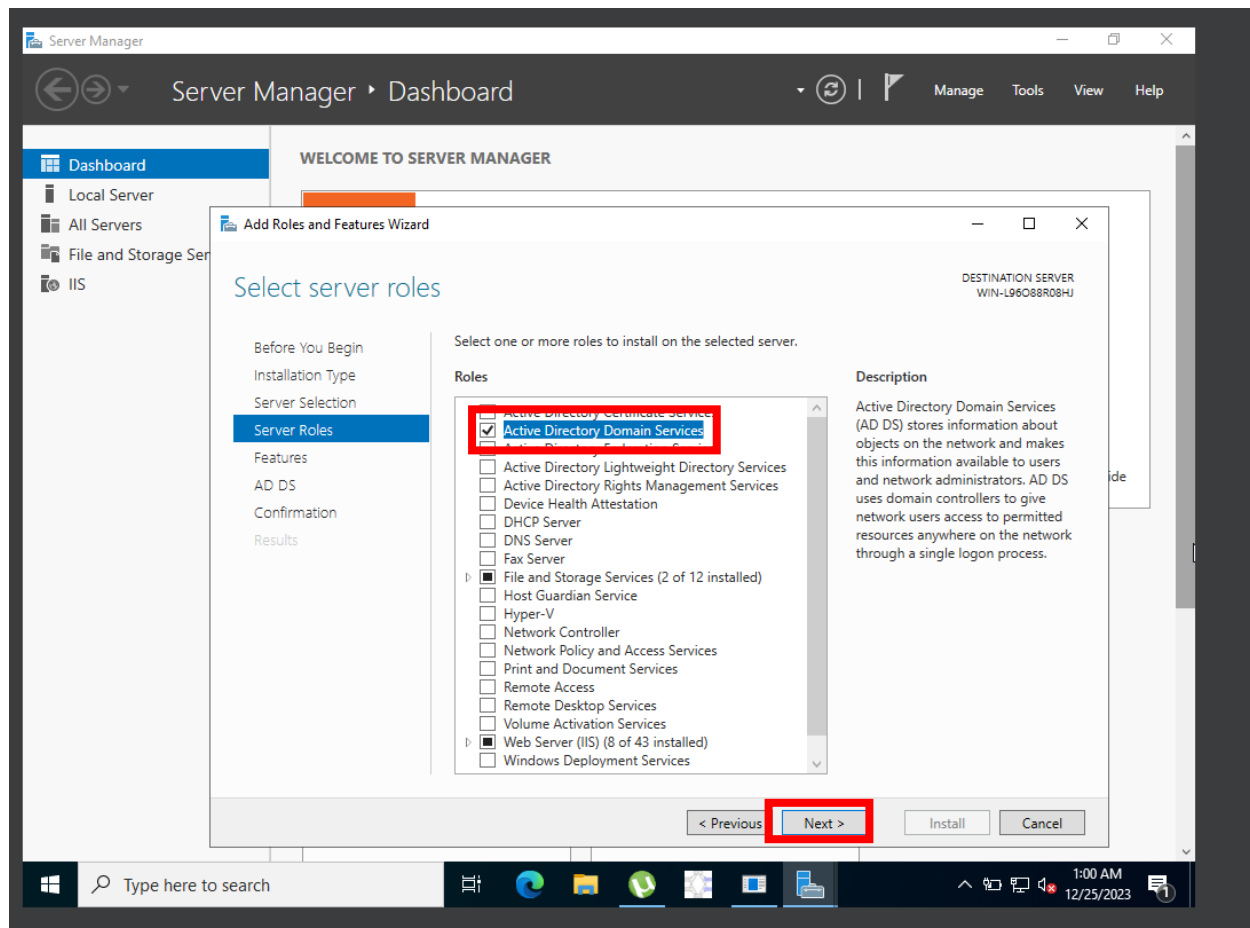

Figure 8 ADDS role added

9. On the select features page we have to leave all the default settings and click on the Next button. Next, you should see the confirm installations selections page.
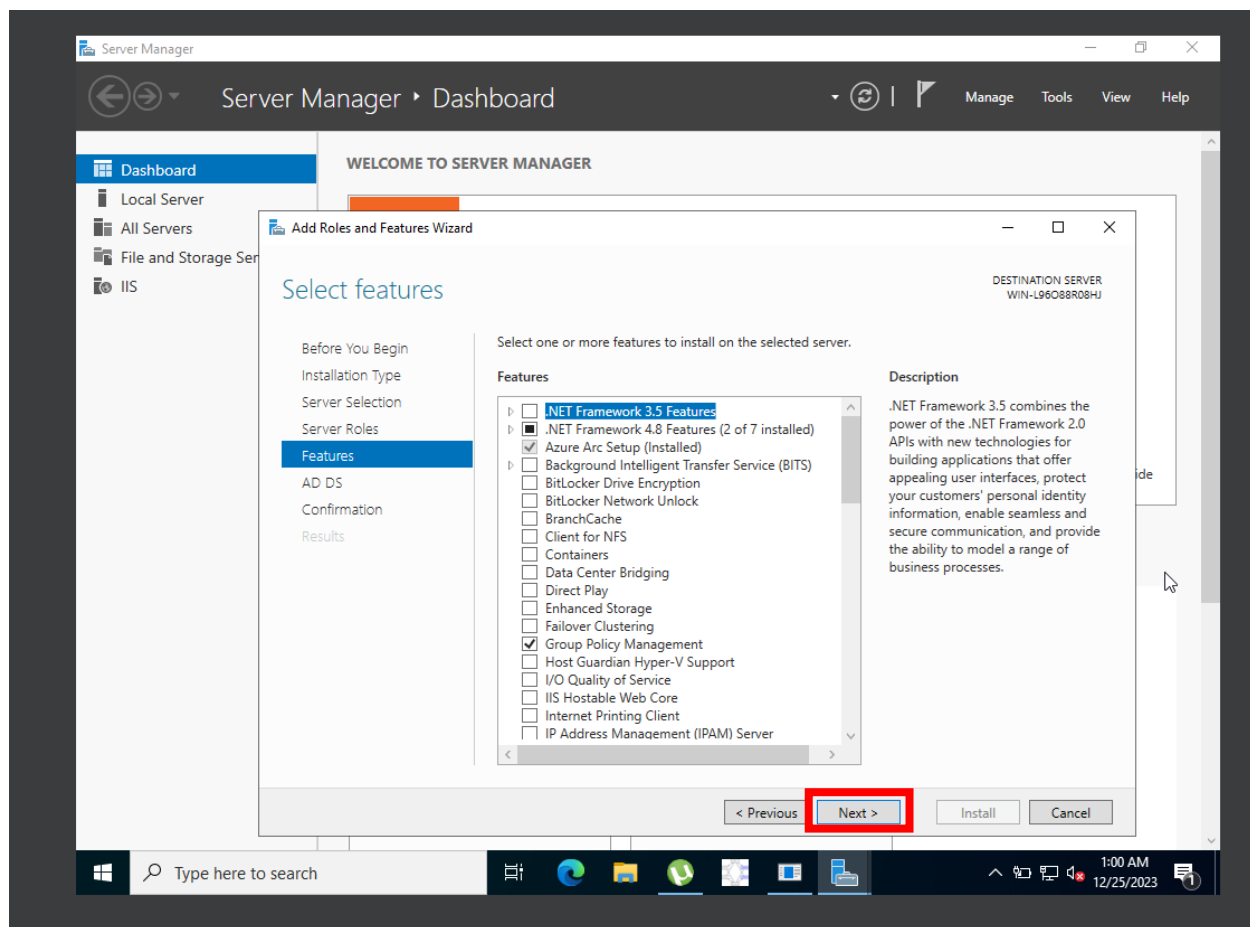

Figure 9 Selecting features.

10. After clicking next, on the new window it shows the information about the type of features or services that we are about to install. We just have to press the next button.
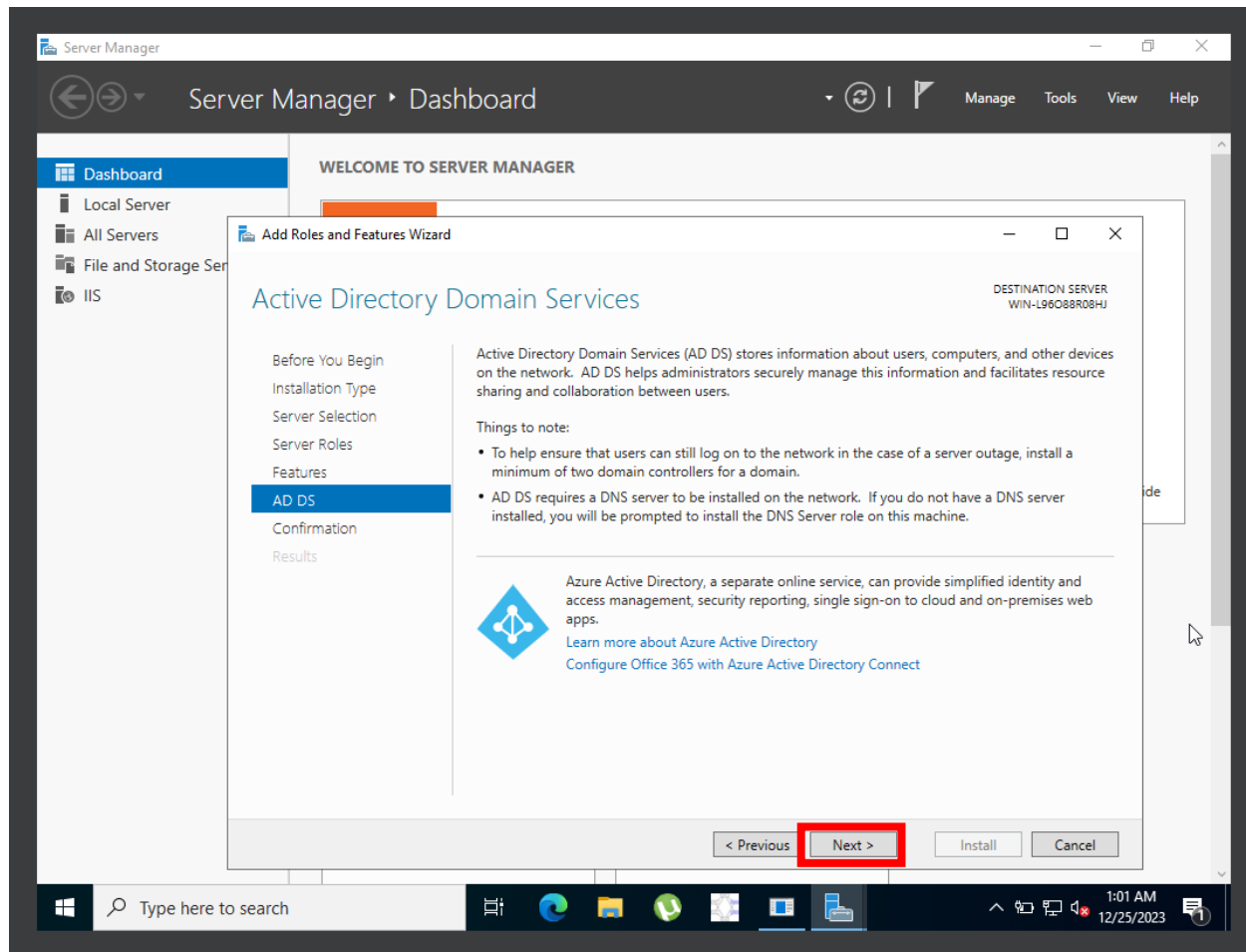

Figure 10 ADDS description.

11. On the confirm installation selections window we will see the lists of all the role, role services or features on the selected server that we want to install, we have to click on restart the destination server automatically if required and press on install.
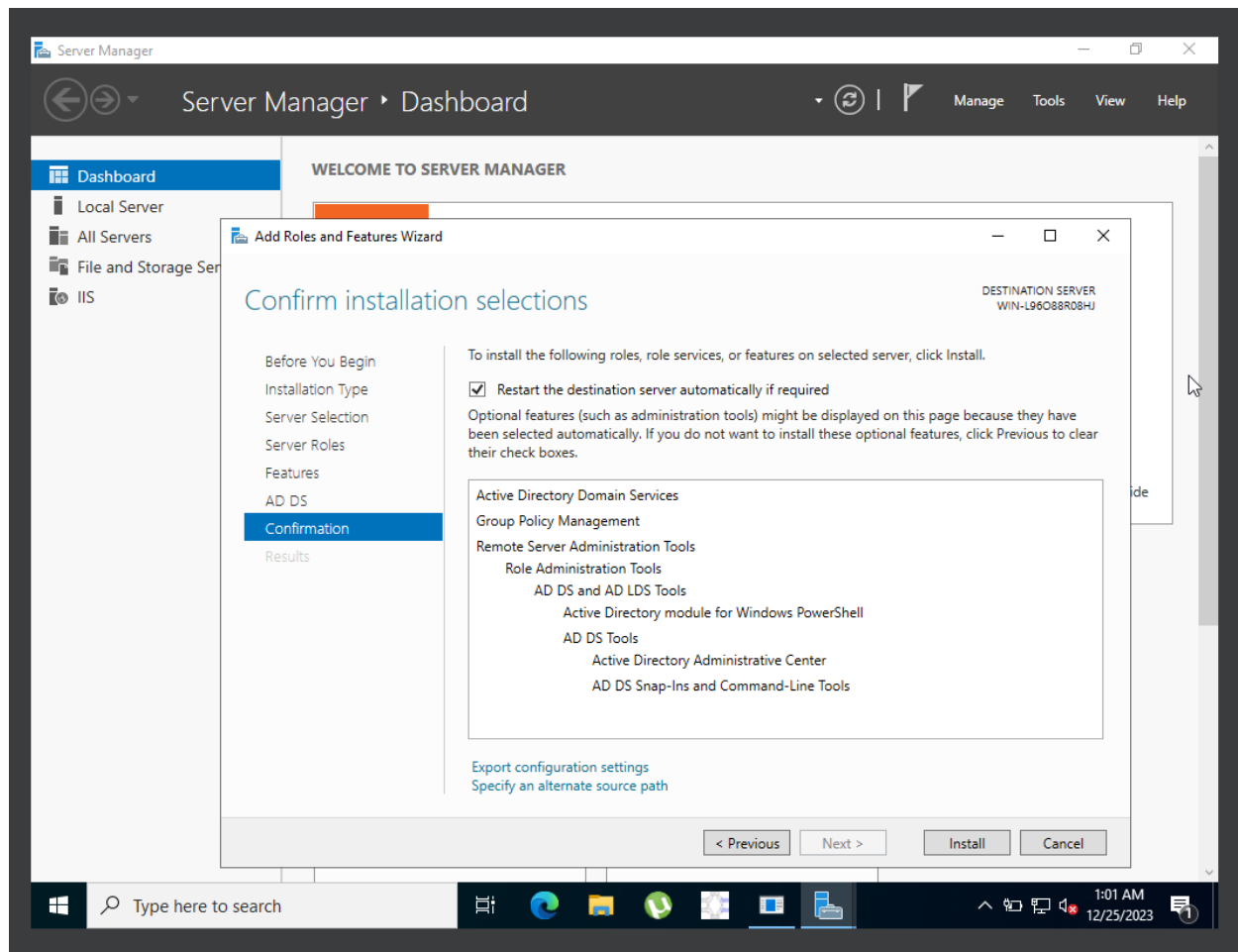

Figure 11 Confirm Installation Selections.

12. After clicking install we have to wait for few minutes before the selected roles, features and services will be installed.
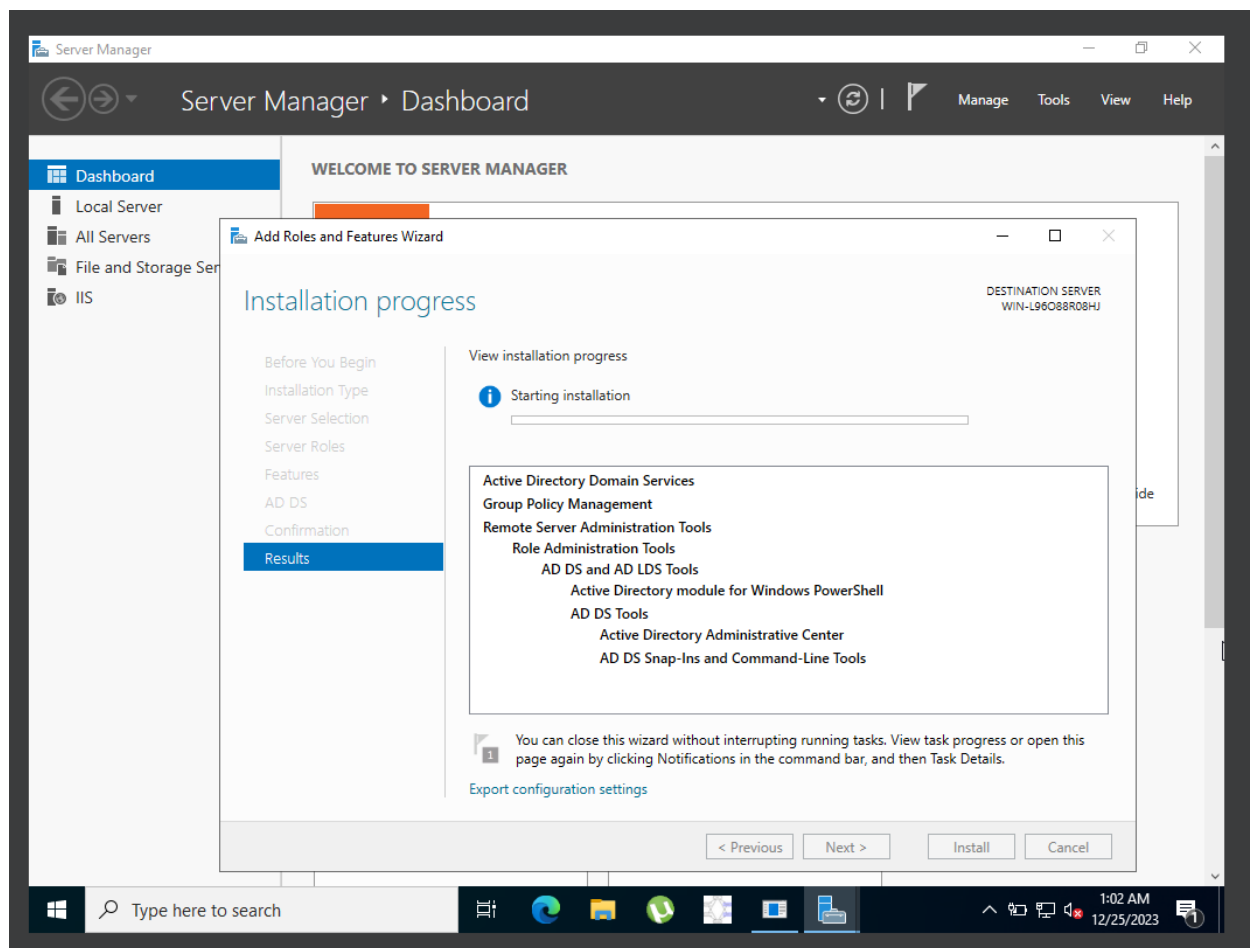

Figure 12 Installation progress.

Aayush Wanem Limbu

13. After a few minutes after the installation phase completed, we will now see a close button and a yellow triangle near the flag area at the server manager. Now we have to press the close button and go back to the home page of the server manager dashboard.
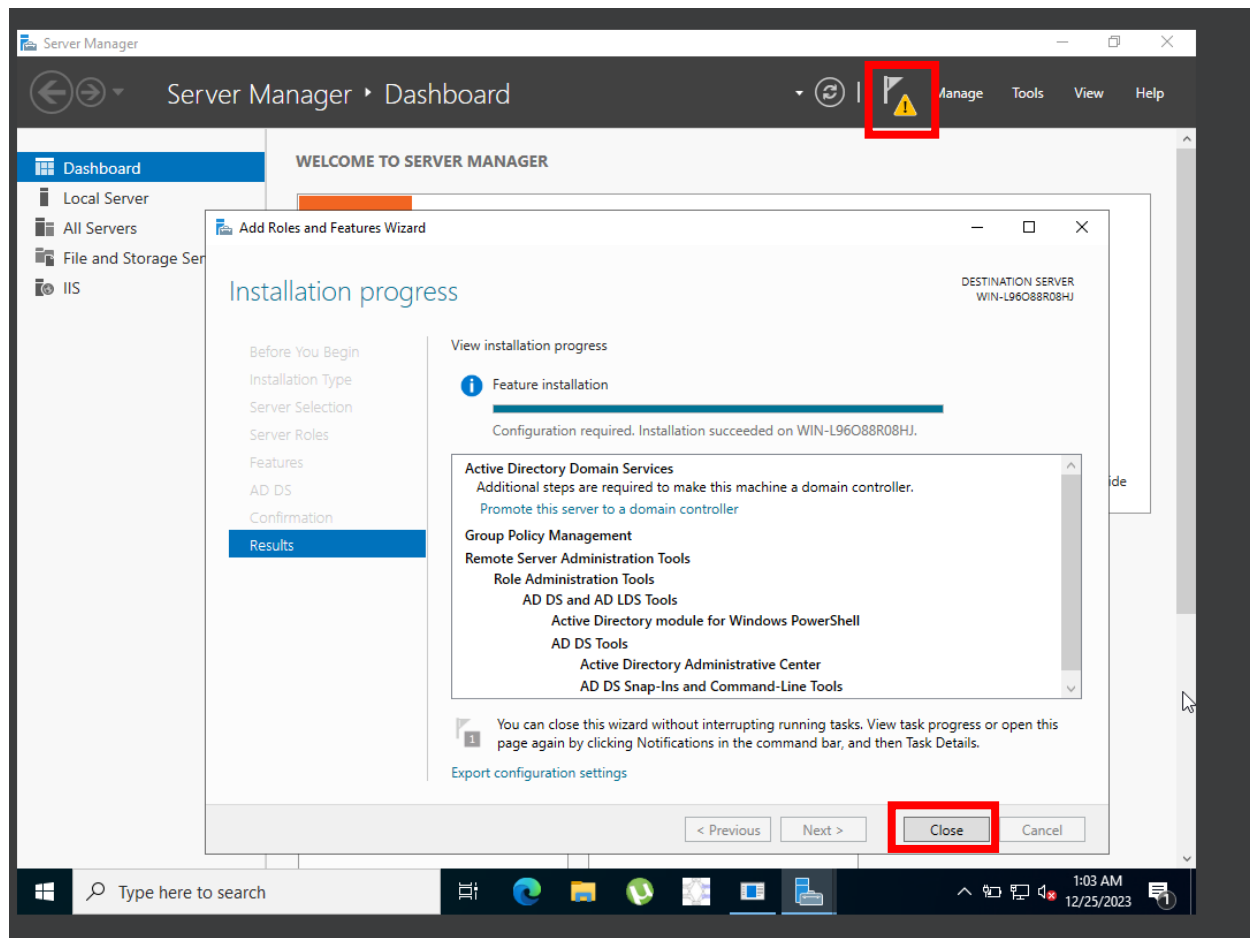

Figure 13 Installation complete.

Aayush Wanem Limbu

1.4 Promoting a Server to a Domain Controller

14. After installing the necessary roles and features we now have to promote our server to a domain controller to do that we now have to, in the server manager dashboard we have to click the flag icon with the yellow triangle and a small new window will appear and now we have to click on the promote this server to a domain controller.
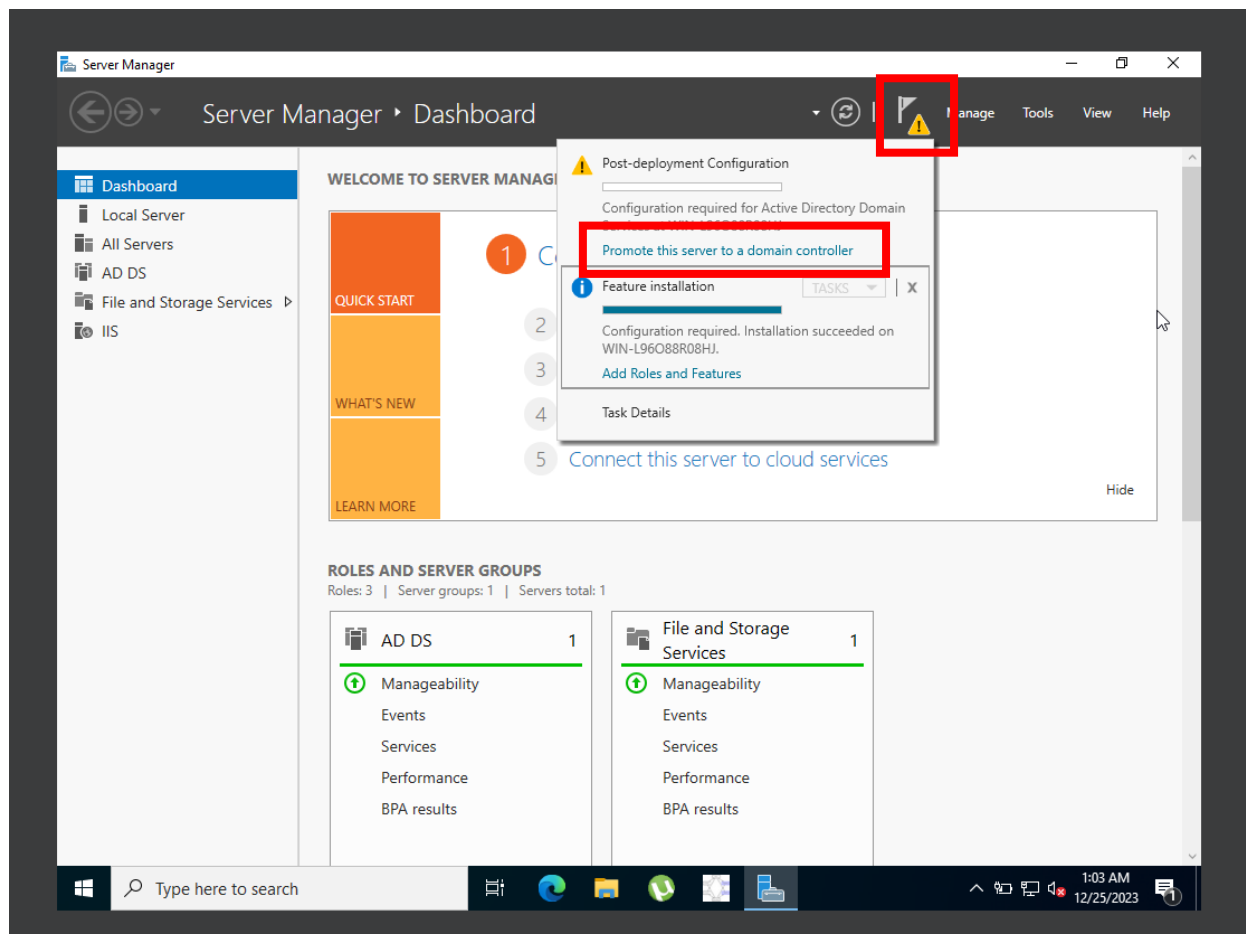

Figure 14 Server manager dashboard flag icon.

Aayush Wanem Limbu

15. Now in this step we have to select add a new forest and set a new root domain
name in the picture below I have set mine to Aayush.com

Domain:

The primary component of Active Directory is the domain, which is a logical group
of objects with common administrative, security, and replication settings. Active
Directory also includes domain controllers, which are servers responsible for
running Active Directory Domain Services. These domain controllers authenticate
and authorize users, manage groups and policies, and store and synchronize the
Active Directory database. Active Directory relies on the Lightweight Directory
Access Protocol (LDAP) as its primary access protocol. Domains are typically
established based on an organization's structure, such as departments, divisions, or
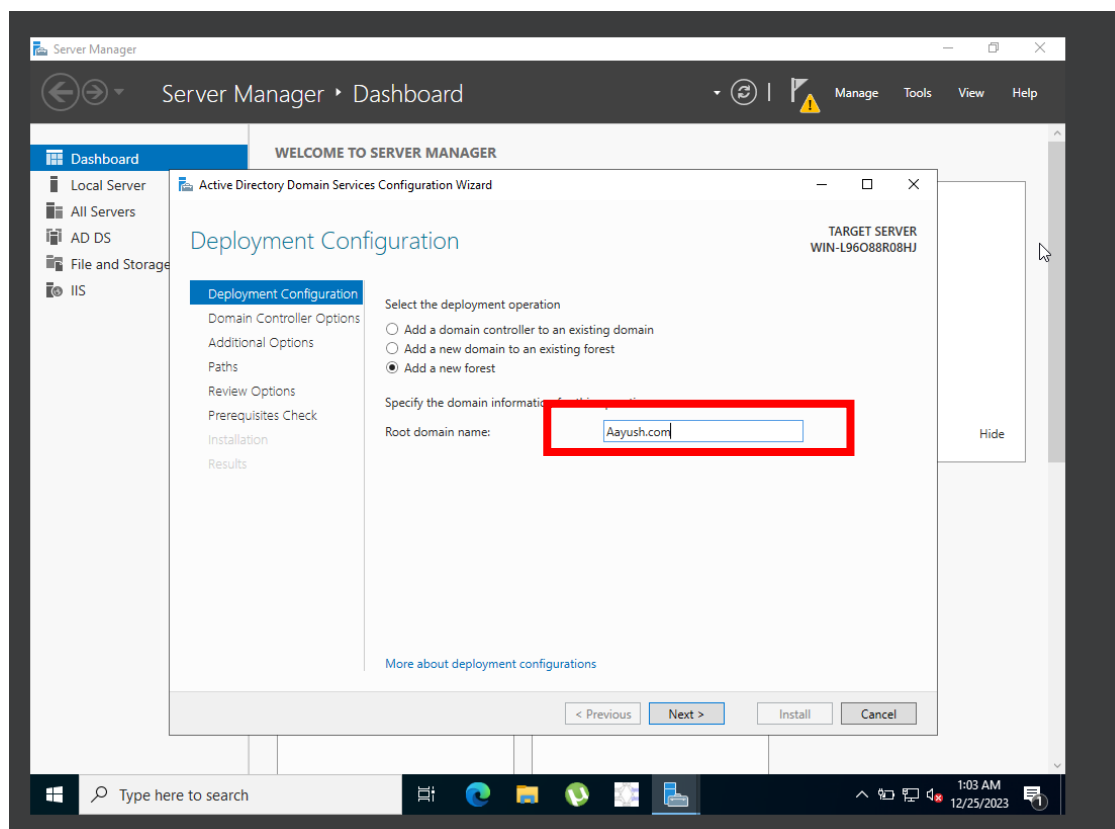physical locations. (Roberts, 2023)

Figure 15 Creating a root domain.

Aayush Wanem Limbu

16. Now in this domain controller options we set the forest functional level and domain functional level to the highest available for us it is the Windows Server 2016 and set the DRSM password.
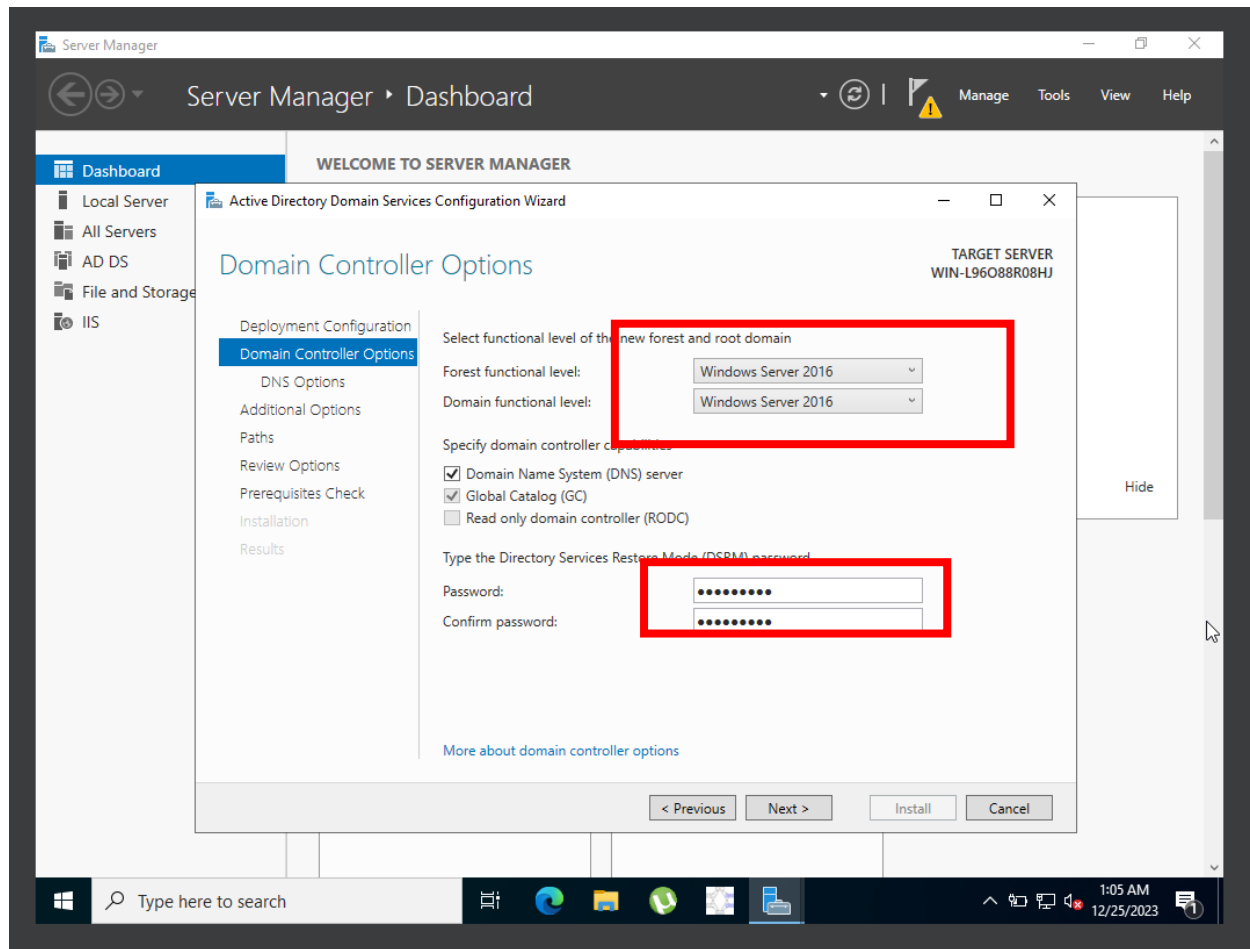

Figure 16 Domain controller options.

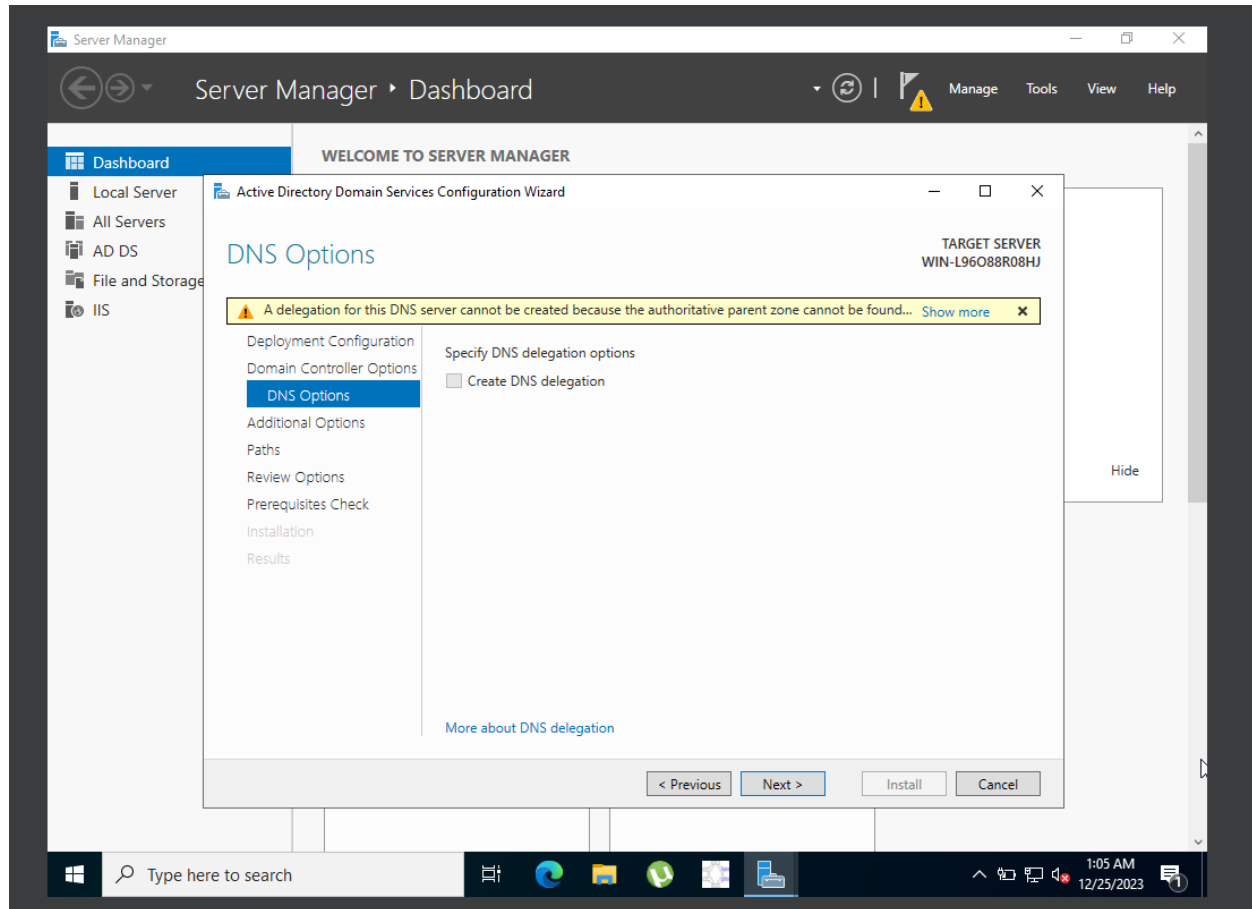17. We will set the dns options to the default and click next.

Figure 17 DNS Options.

Aayush Wanem Limbu

18. In the additional options phase, we will set the NetBIOS domain name and click next.

Figure 18 Setting NetBIOS domain name.

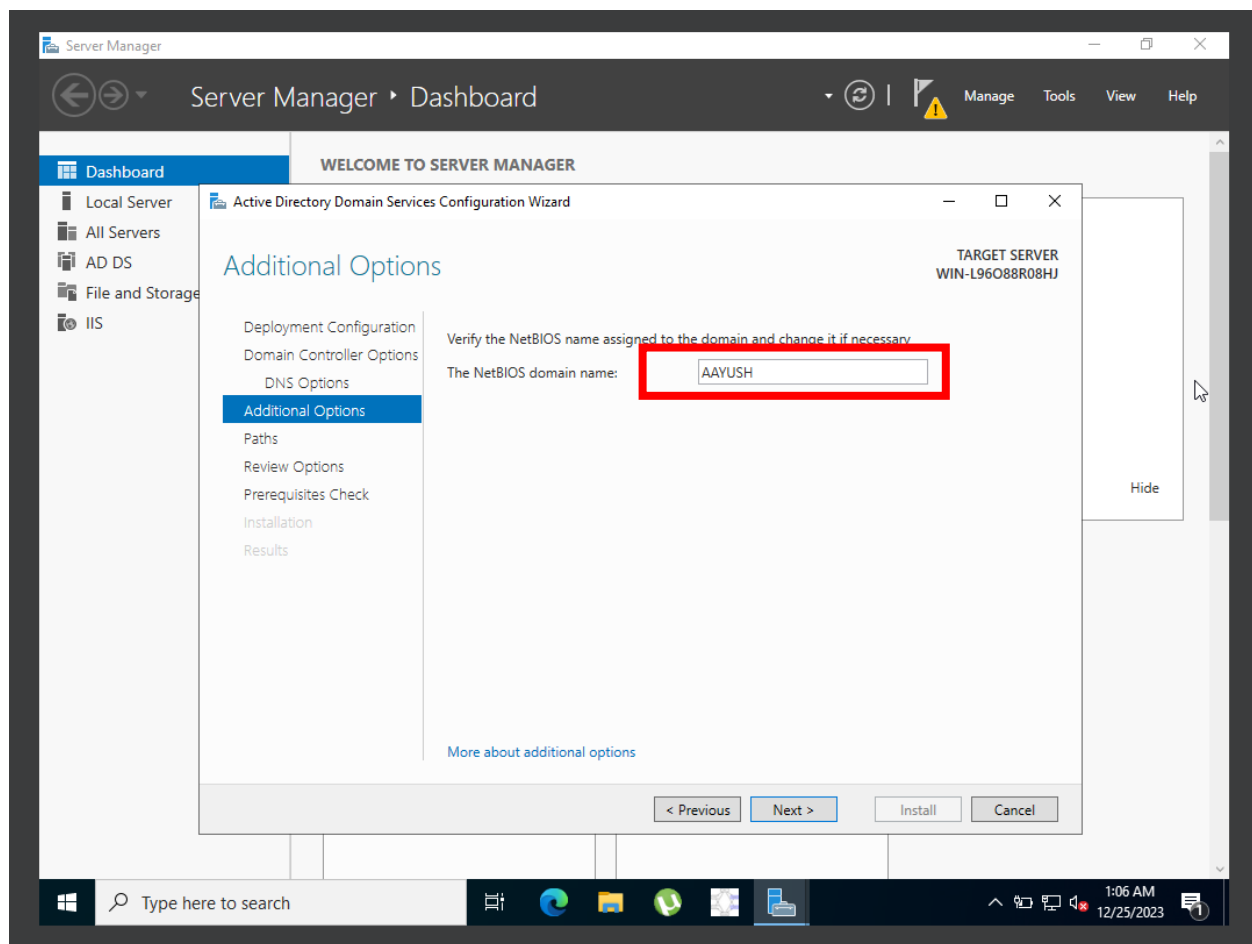Aayush Wanem Limbu

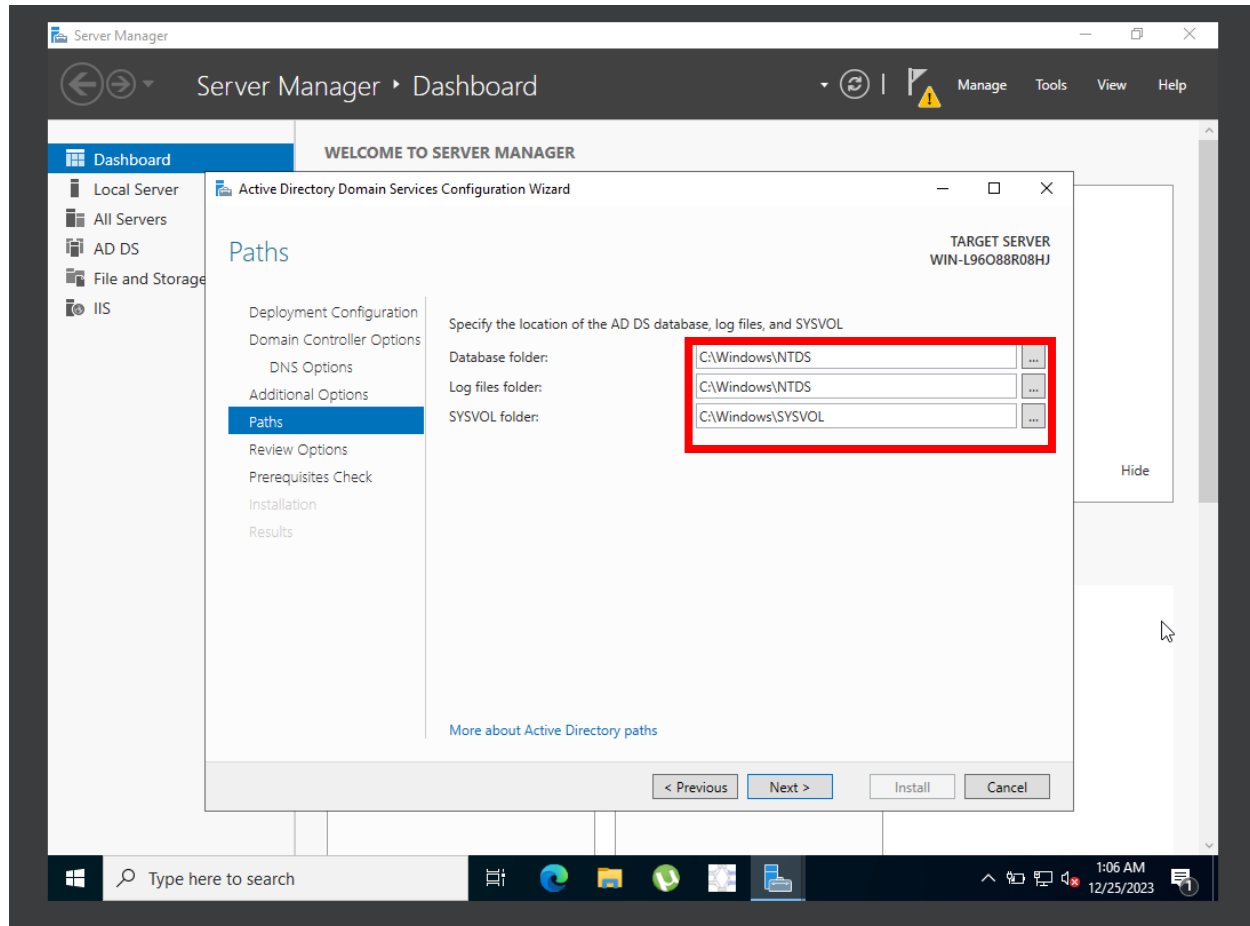19. We will leave the paths to the default ones and click on the next button.

Figure 19 Paths

20. On the review options page we will see all the lists of configurations and settings that we have made, verify it once and click on next.
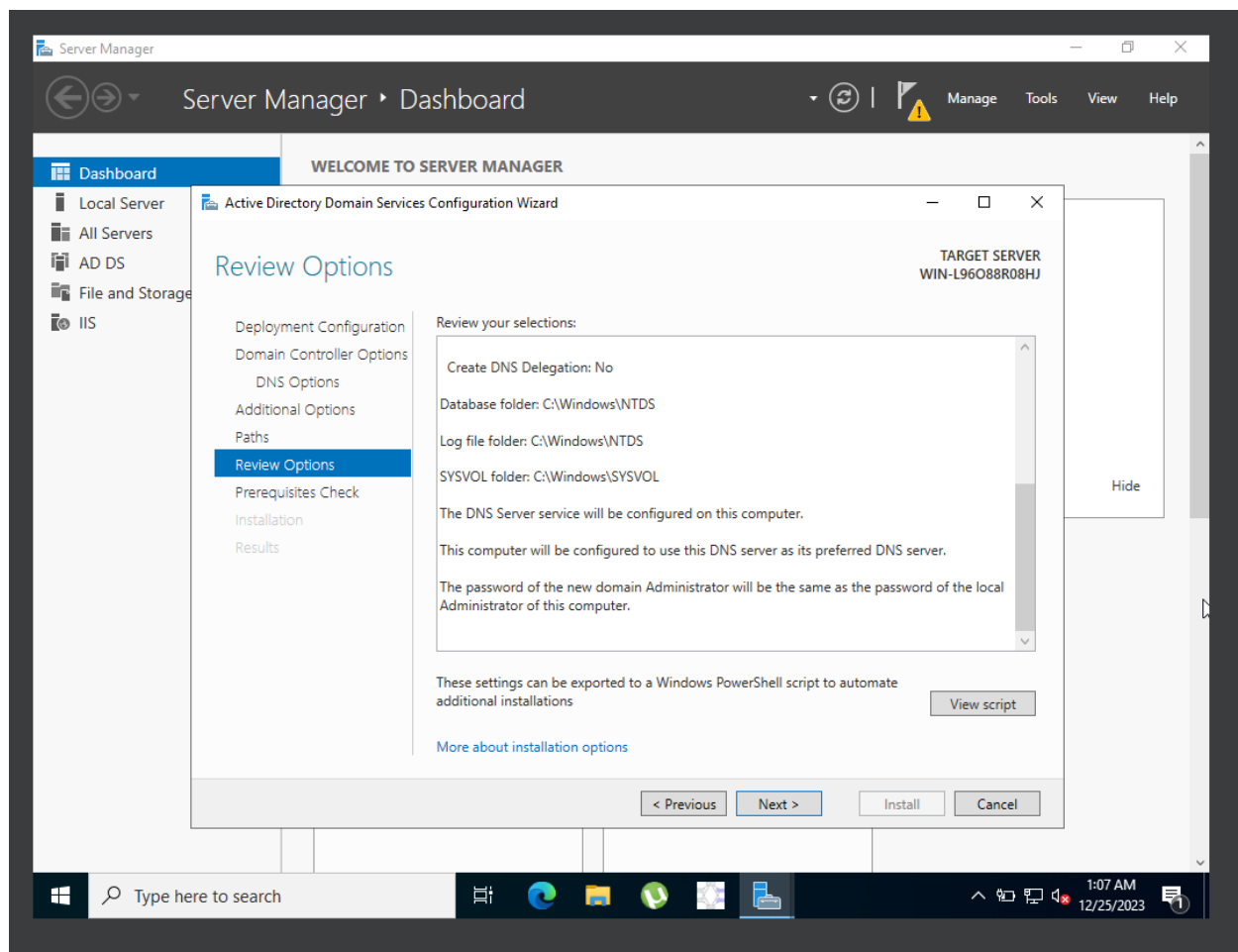

Figure 20 Review Options

Aayush Wanem Limbu

21. On this prerequisites check phase we will click on the install button and wait till all of our prerequisites are installed.
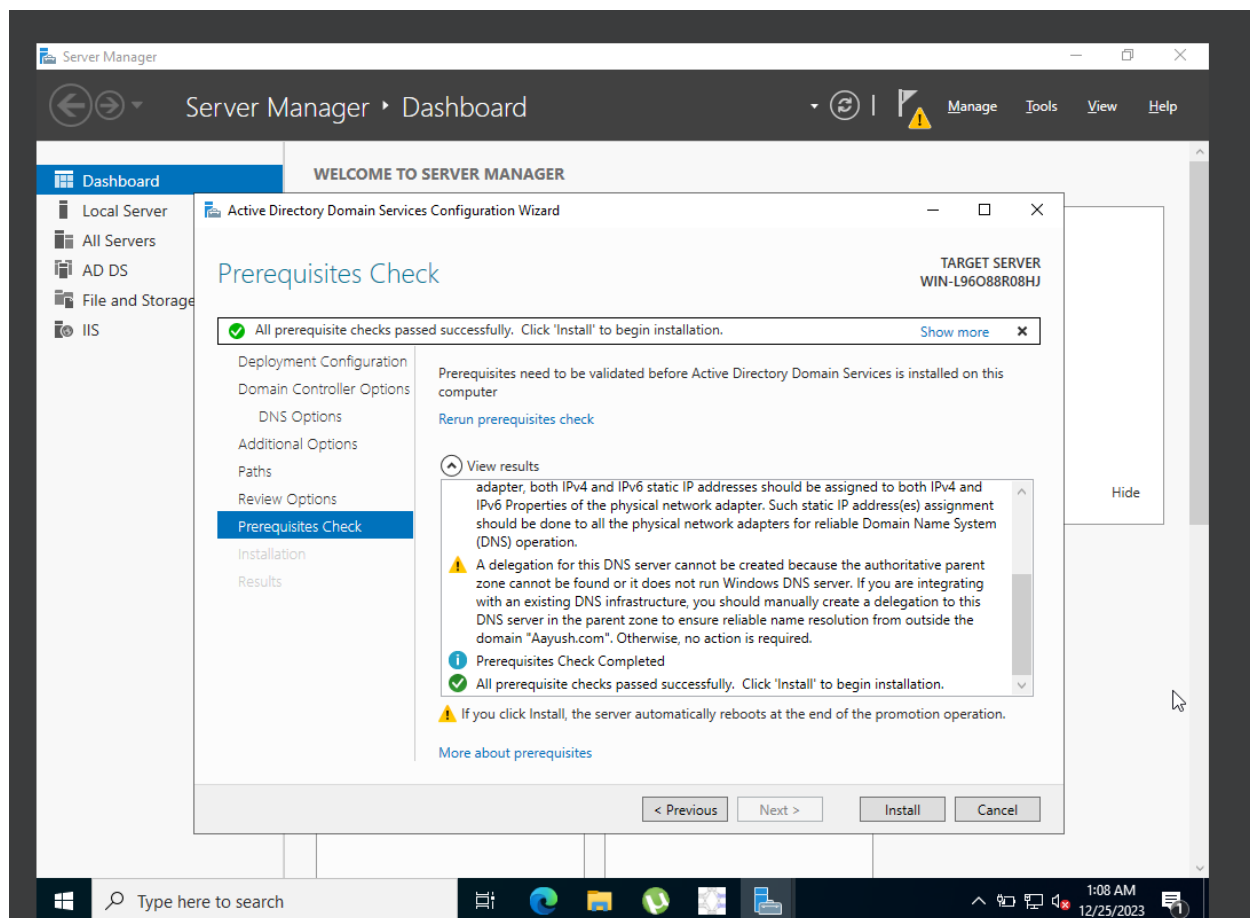

Figure 21 Prerequisites Install

22. After all the prerequisites have been installed our Windows Server will be automatically restarted and all the necessary configurations will be done.
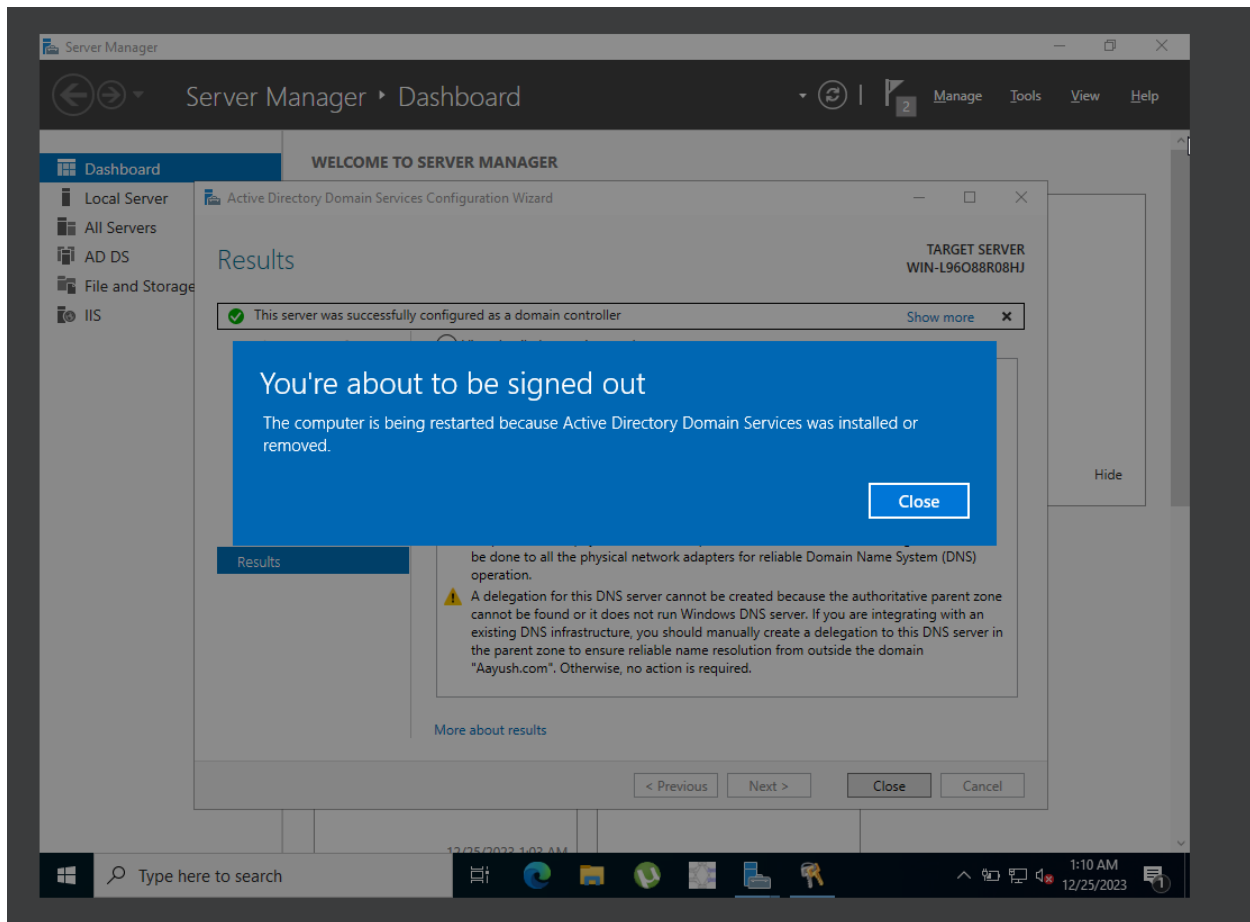

Figure 22 Restart Prompt

Now, all we need to do is to verify our domain controller using certain commands.

1.5 Verifying domain controller

23. After our server has been restart it successfully, we need to log in to our server using the administrator account.
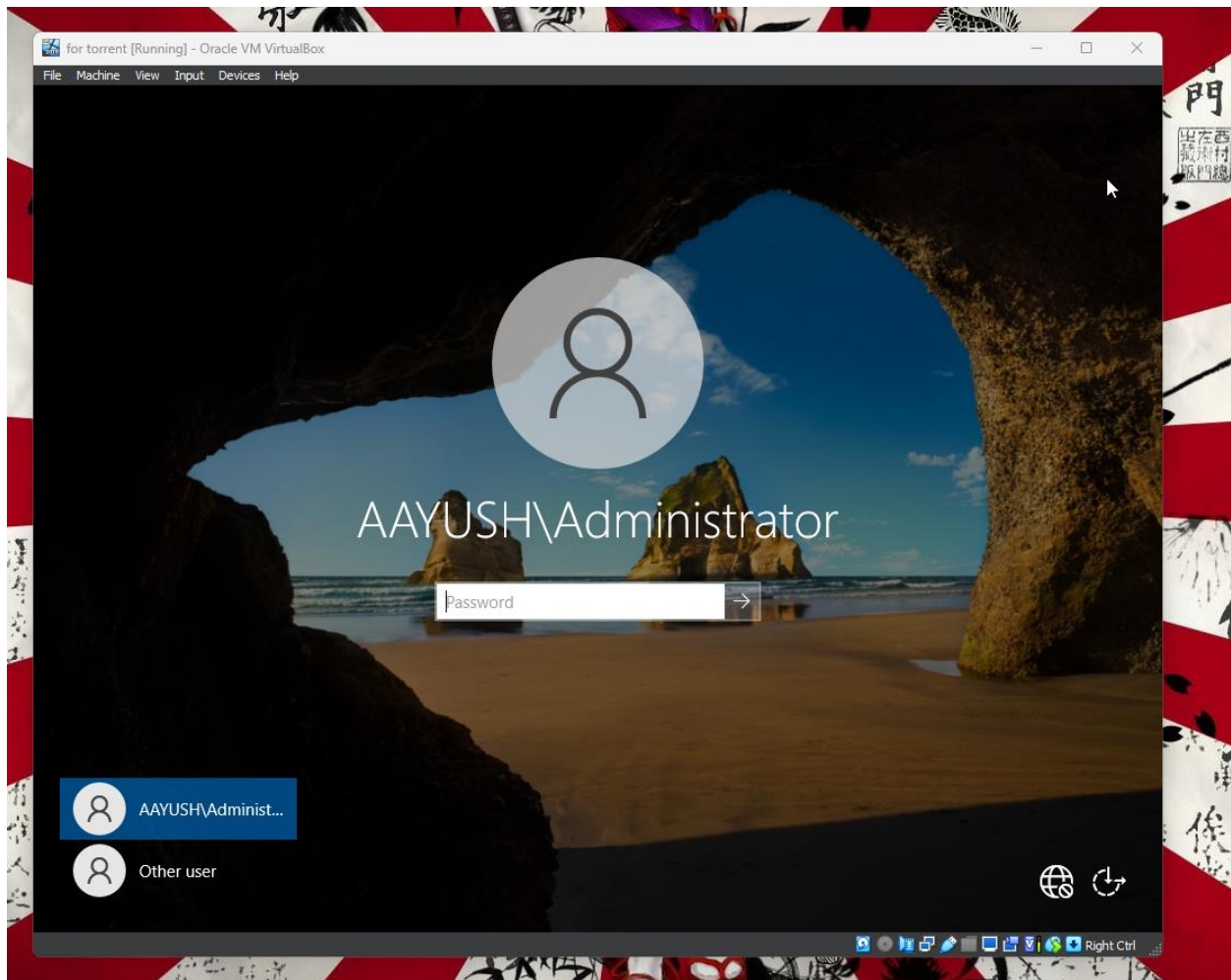

Figure 23 Server Lock Screen

Aayush Wanem Limbu

Figure 24 Logging In to the server.

Aayush Wanem Limbu

24. After we successfully login into our server we need to open PowerShell to run certain commands to verify that the domain controller it's set up perfectly.
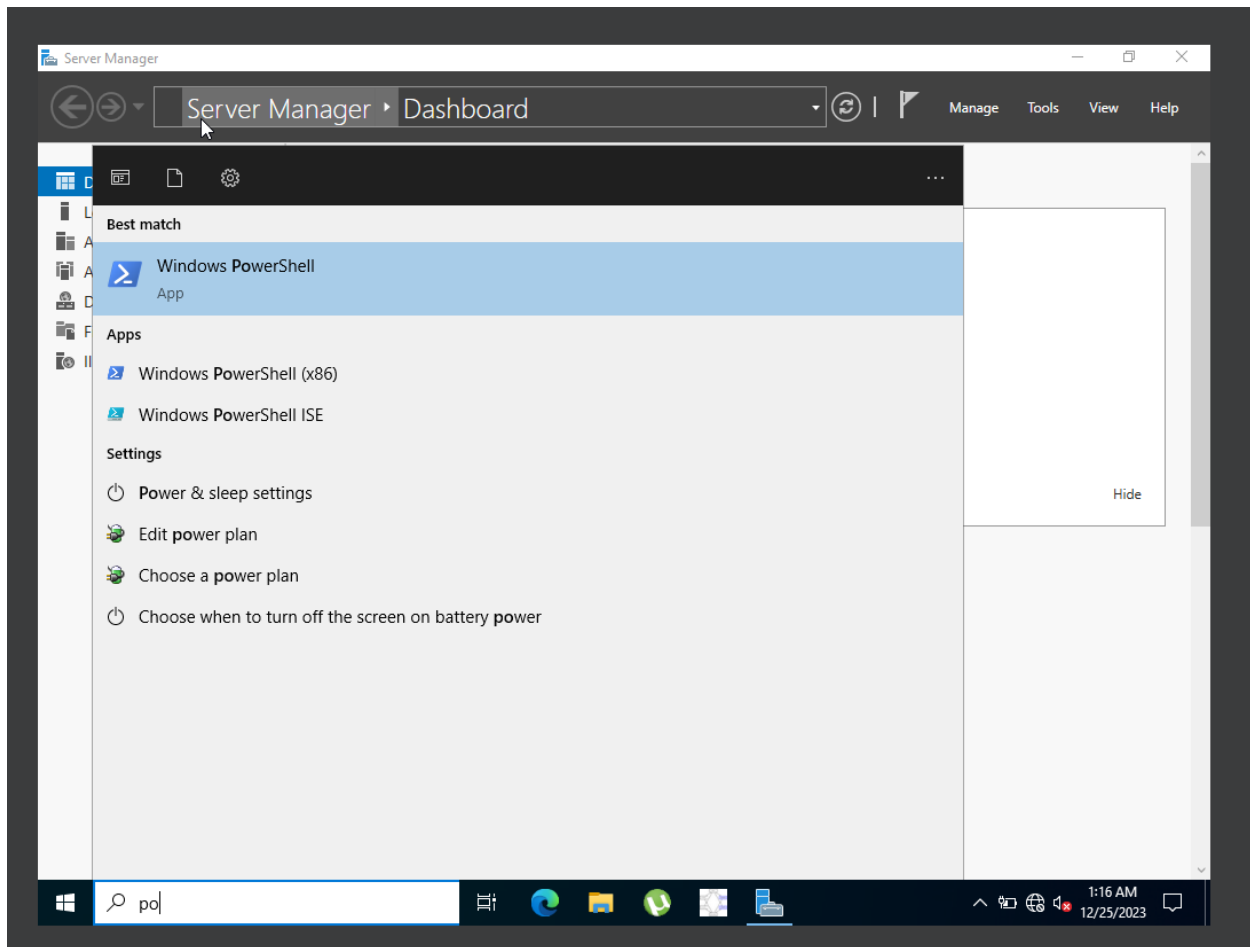

Figure 25 Opening PowerShell.

25. "**Get-Service adws,kdc,netlogon,dns**":

The **Get-Service** PowerShell command retrieves information about specified services. In this case, it is querying the status of the following services:

1. **adws (Active Directory Web Services):** This service provides a web service interface to access Active Directory.

2. **kdc (Key Distribution Center):** The KDC service is crucial for the functioning of the Kerberos authentication protocol, which is commonly used in Windows environments.

3. **netlogon:** This service is responsible for the Netlogon service that authenticates users and computers in a Windows domain.

4. **dns (Domain Name System):** The DNS service is essential for translating human-readable domain names into IP addresses on a network.

The result of the command will show information about each specified service, including its display name, service name, and status (running, stopped, etc.). This information helps us monitor the status of services in a Windows environment.
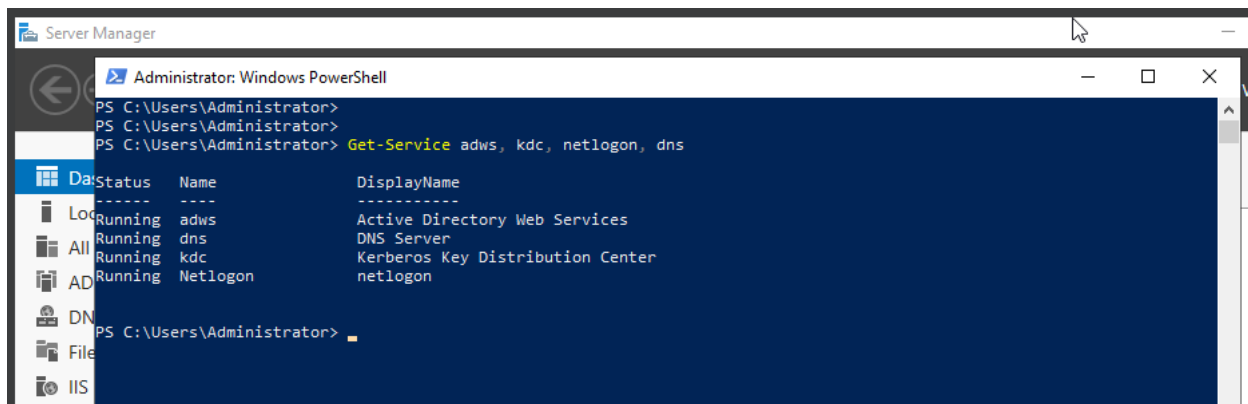

Figure 26 Get-Service adws,kdc,netlogon,dns

Aayush Wanem Limbu

26. **Get-ADDomainController:**

The **Get-ADDomainController** PowerShell command is used to retrieve information about domain controllers in an Active Directory domain. When you run this command, it will display details about all domain controllers in the current domain, such as the server's name, site, and whether it is a global catalog server. This information is valuable for managing and monitoring the domain controller infrastructure within an Active Directory environment.
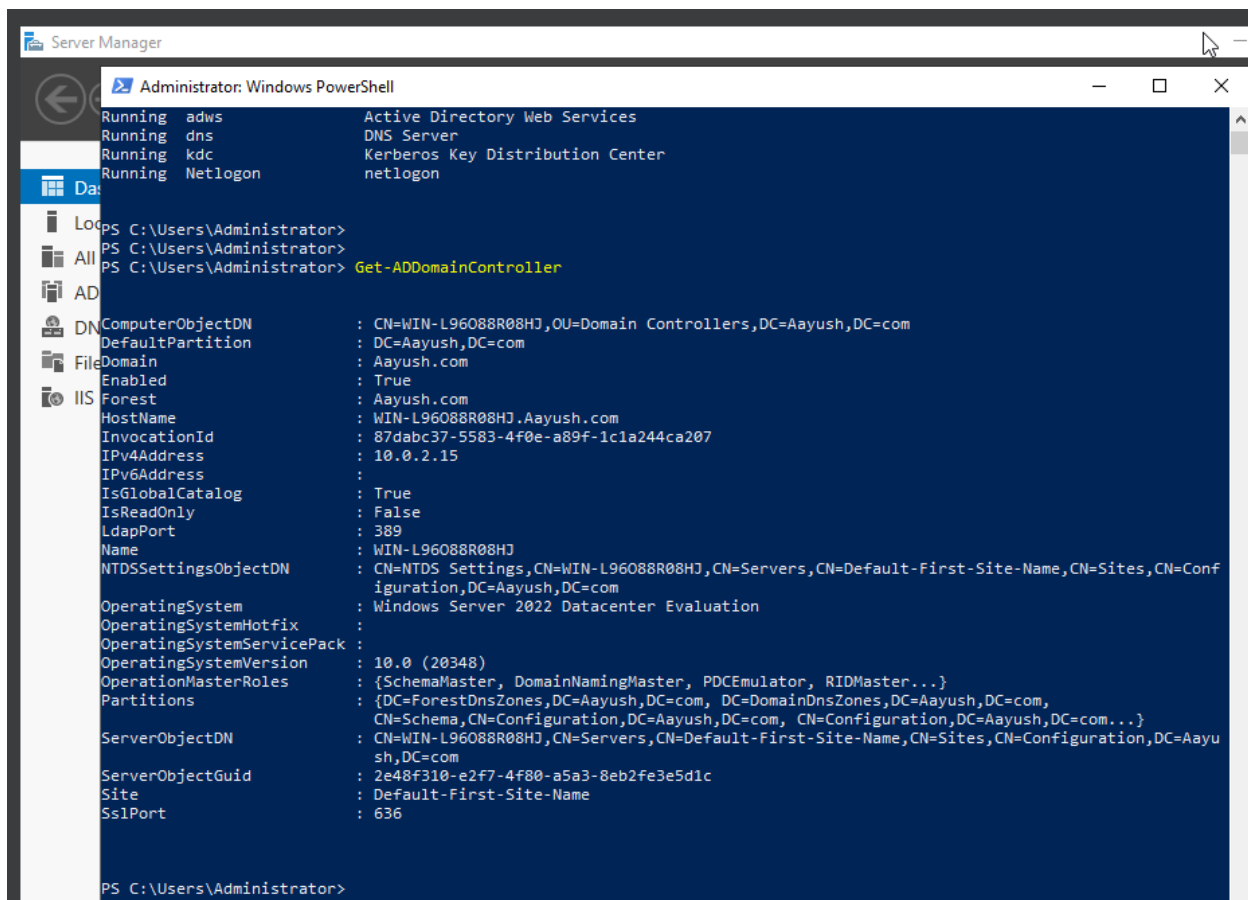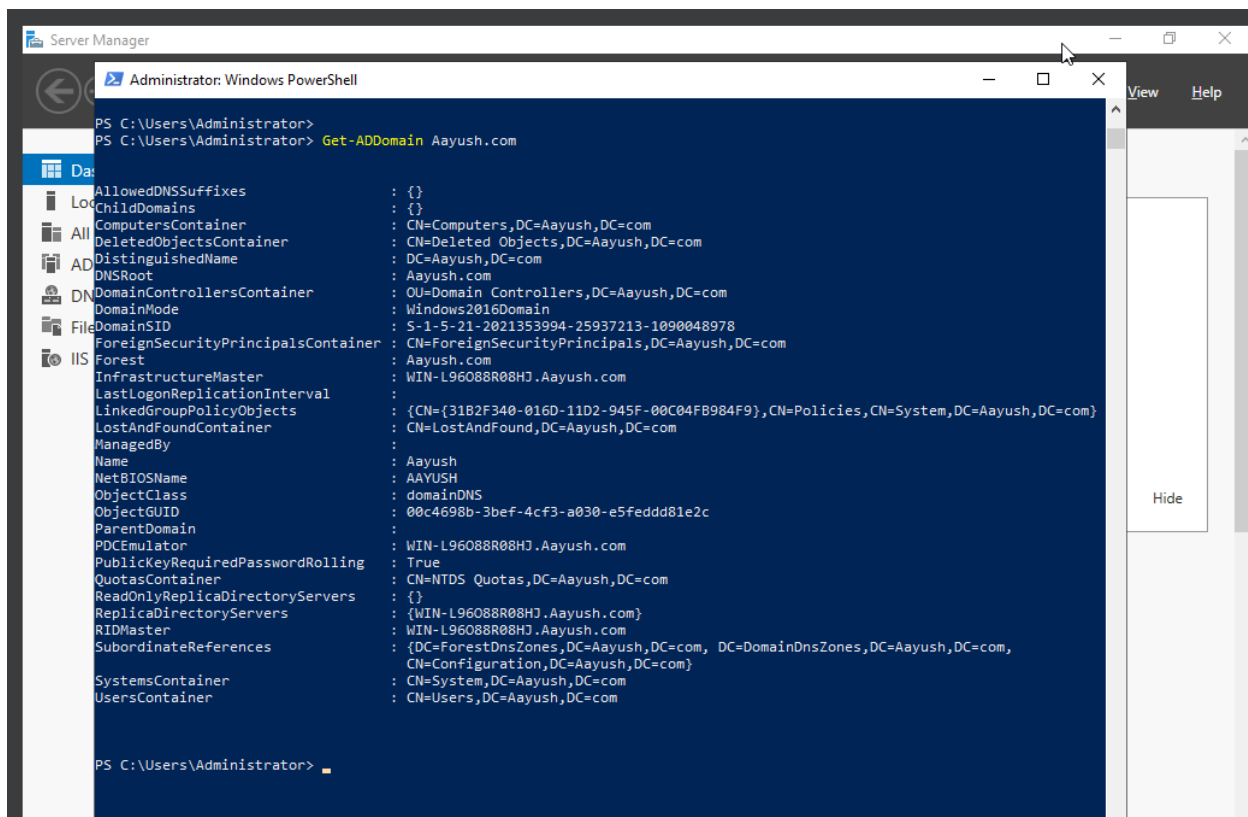

Figure 27 running Get-ADDomainController

Aayush Wanem Limbu

27. **Get-ADDomain Aayush.com**

The **Get-ADDomain** PowerShell command is used to retrieve information about an Active Directory domain. In your example, it would be looking for details about the domain named "Aayush.com." This command provides information such as the domain's NetBIOS name, DNS name, the domain SID (Security Identifier), and other relevant details about the specified Active Directory domain. If the domain exists and the command is executed successfully, you'll see information related to the "Aayush.com" domain.

Figure 28 running Get-ADDomain Aayush.com

Aayush Wanem Limbu

28. Get-ADForest Aayush.com:

The Get-ADForest PowerShell command is used to retrieve information about the Active Directory forest to which a specified domain belongs. In your example, it would be looking for details about the forest associated with the domain "Aayush.com." This command provides information such as the forest's schema version, the global catalog, the domain naming master, and other forest-related details. If the domain "Aayush.com" is part of an Active Directory forest and the command is executed successfully, you'll see information related to the forest associated with that domain.
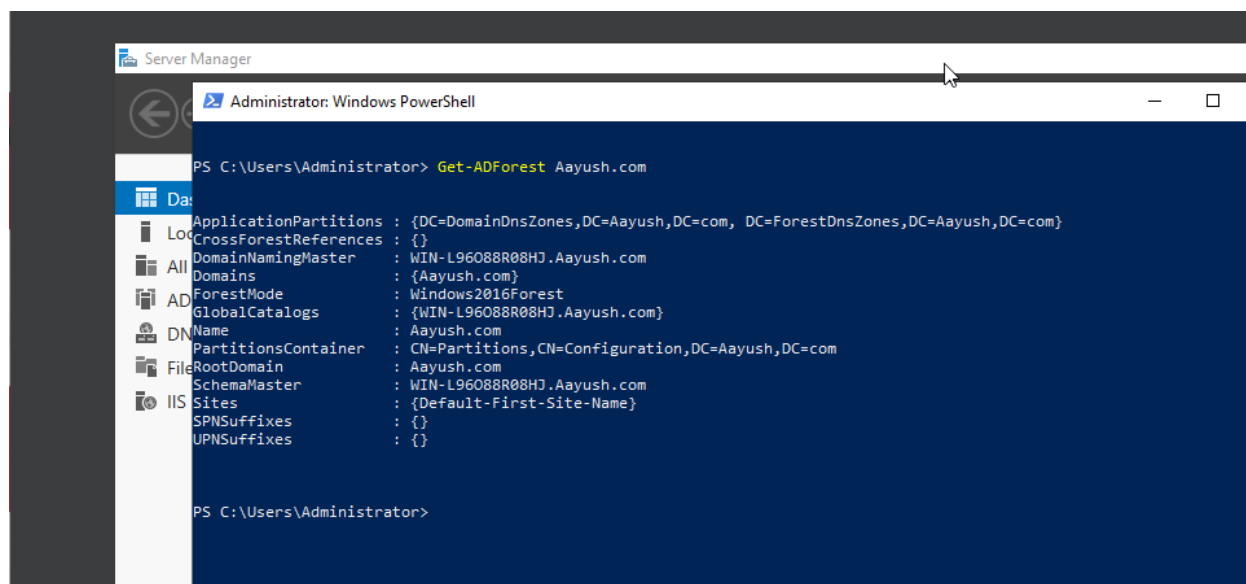

Figure 29 running Get-ADForest Aayush.com

Aayush Wanem Limbu

1.6 Conclusion

In conclusion, this step-by-step guide outlines the process of installing and configuring Active Directory Domain Services on a Windows Server 2022 environment. Starting from the initial setup in Server Manager, adding roles and features, and progressing through the deployment configuration, the guide ensures a comprehensive approach to establishing a domain controller.

The addition of PowerShell commands for verification adds a practical aspect, allowing users to confirm the successful installation of services, check the status of critical components, and retrieve detailed information about the newly configured domain controller. This guide serves as a valuable resource for administrators seeking a structured approach to deploying Active Directory in a Windows Server environment.

Aayush Wanem Limbu

1.7 References

References

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[Accessed 26 12 2023].

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[Accessed 27 12 2023].

Aayush Wanem Limbu