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Level 5 – Network Operating System

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I confirm that I understand my coursework needs to be submitted online via GitHub before the deadline 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.

Table of Contents

Table of figures

Introduction

This log provides a comprehensive record of the process involved in setting up an **Active Directory Domain Controller** in a **Windows Server 2022** environment. Active Directory (AD) is a critical Microsoft technology that enables centralized management of network resources, including users, computers, and other devices. By implementing a Domain Controller, we can enforce security policies, streamline user authentication, and efficiently manage access to network resources. This log aims to document the steps taken to set up a Domain Controller, providing a clear and traceable record of the configuration process.

The log begins by explaining the fundamental concepts of Active Directory, using an analogy to a mobile phone's contact application to illustrate its functionality. This helps us understand AD as a system that organizes and manages objects (like contacts) across the network. It then provides a detailed, step-by-step walkthrough of the installation and configuration process. Each step is supported by screenshots, ensuring clarity and ease of understanding. These steps include installing **Active Directory Domain Services (AD DS)**, promoting the server to a Domain Controller, and configuring essential settings, such as the domain name and **Directory Services Restore Mode (DSRM)** password.

Finally, the log concludes with verification procedures to confirm the successful setup of the Domain Controller. It outlines how we can use **PowerShell commands** to:

- Check the status of critical services,
- Retrieve domain and Domain Controller information, and
- Verify the overall health of the Active Directory environment.

By following this log, we can create a detailed audit trail of the deployment and configuration process for our Active Directory infrastructure. This documentation serves as a valuable reference for troubleshooting and future maintenance, ensuring a secure and efficient network environment.

STEP 1

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

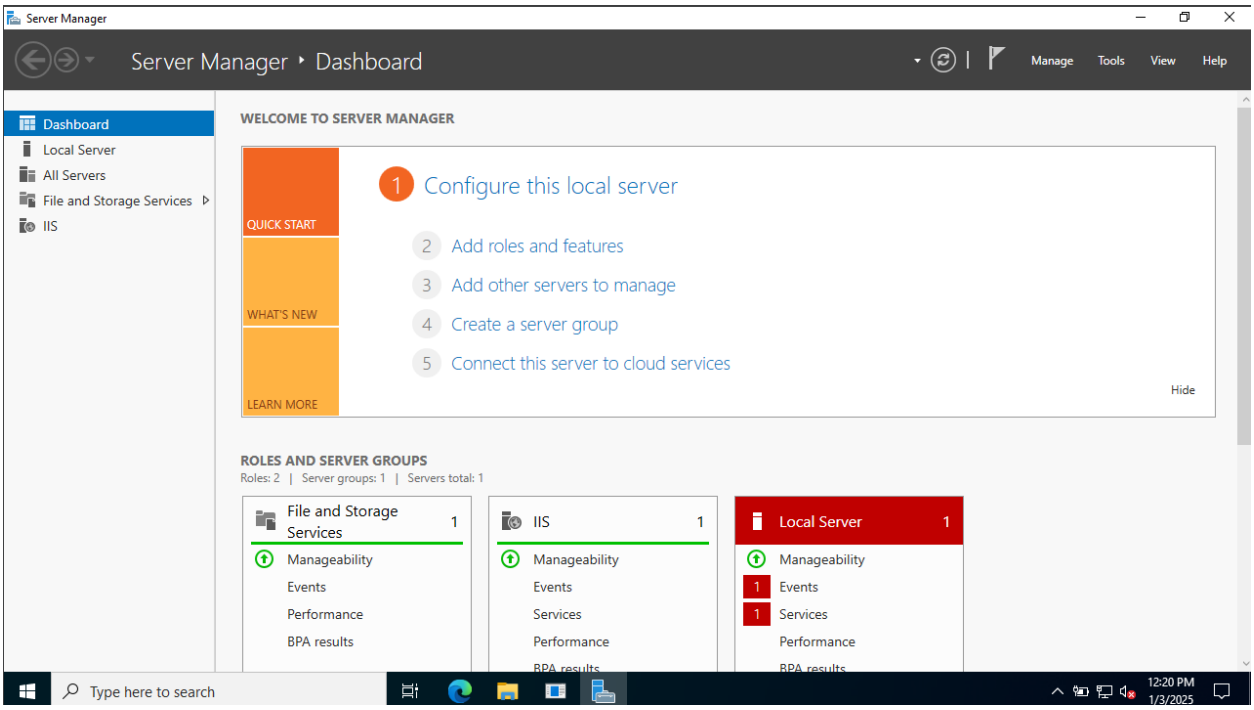

Figure 1: Opening Server manager

STEP 2

Click on the **Add Roles and Features**. This will open the Add Roles and Features Wizard as shown below:

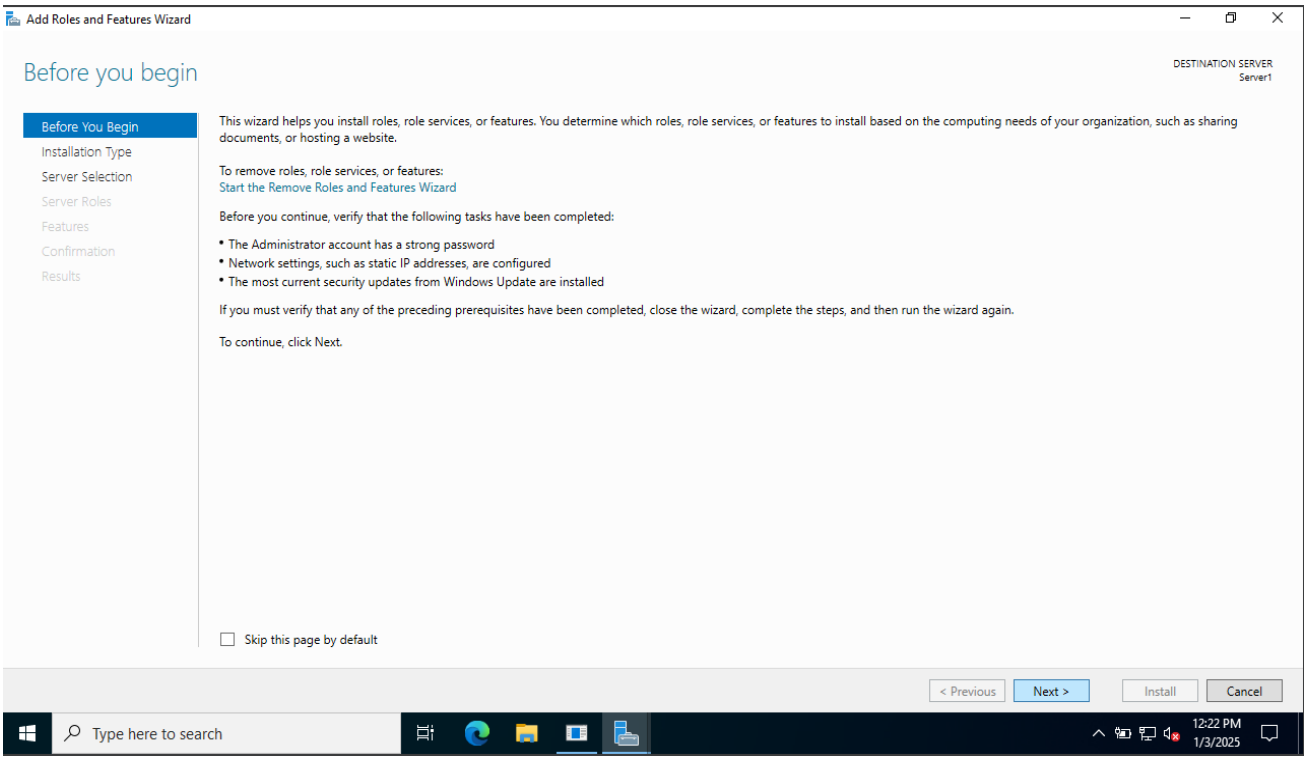

Figure 2: Add Roles & Features

STEP 3

Click on the **Next** button. We will be asked to select the installation type as shown below:

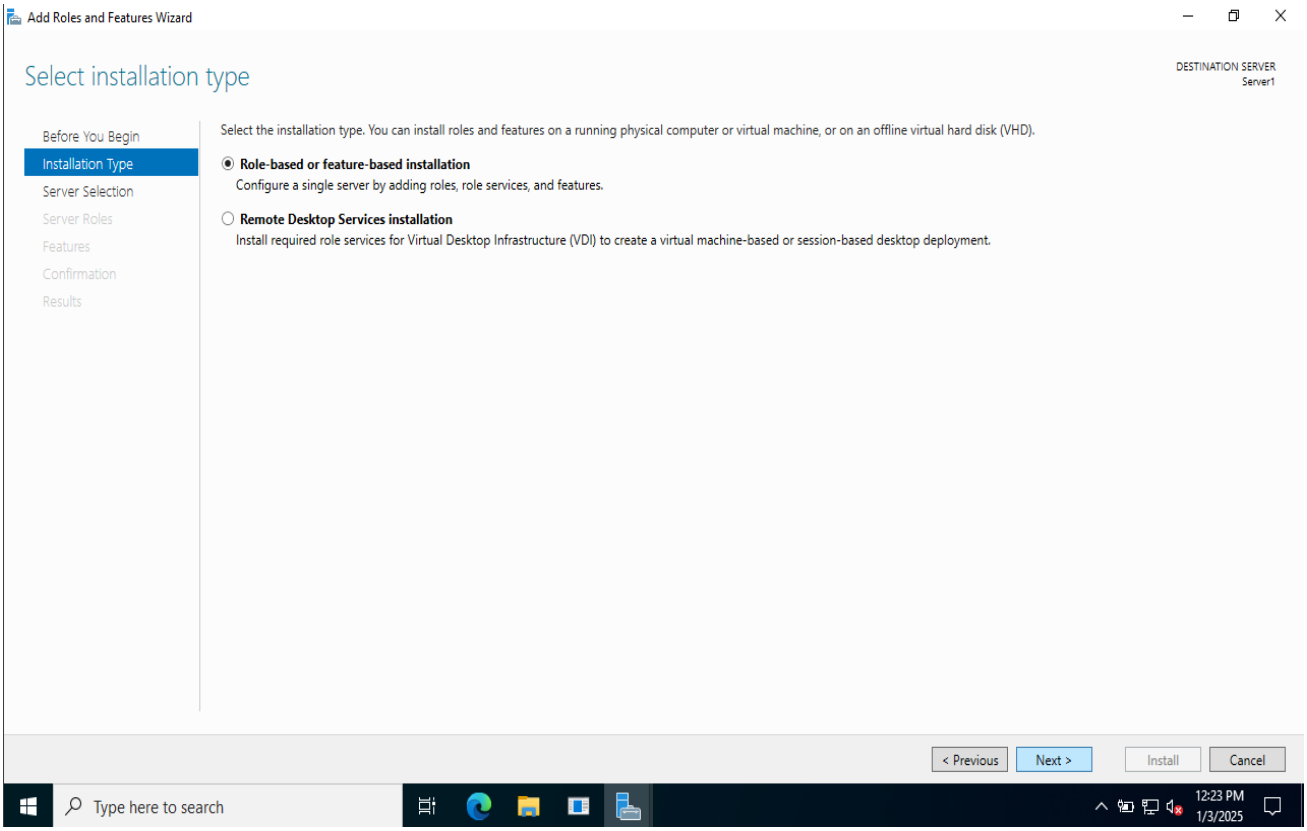

Figure 3: Select Installation Type

STEP 4

Select **Add Roles and Features** Wizard and click on the **Next** button. Next, we will be asked to select a destination server as shown below:

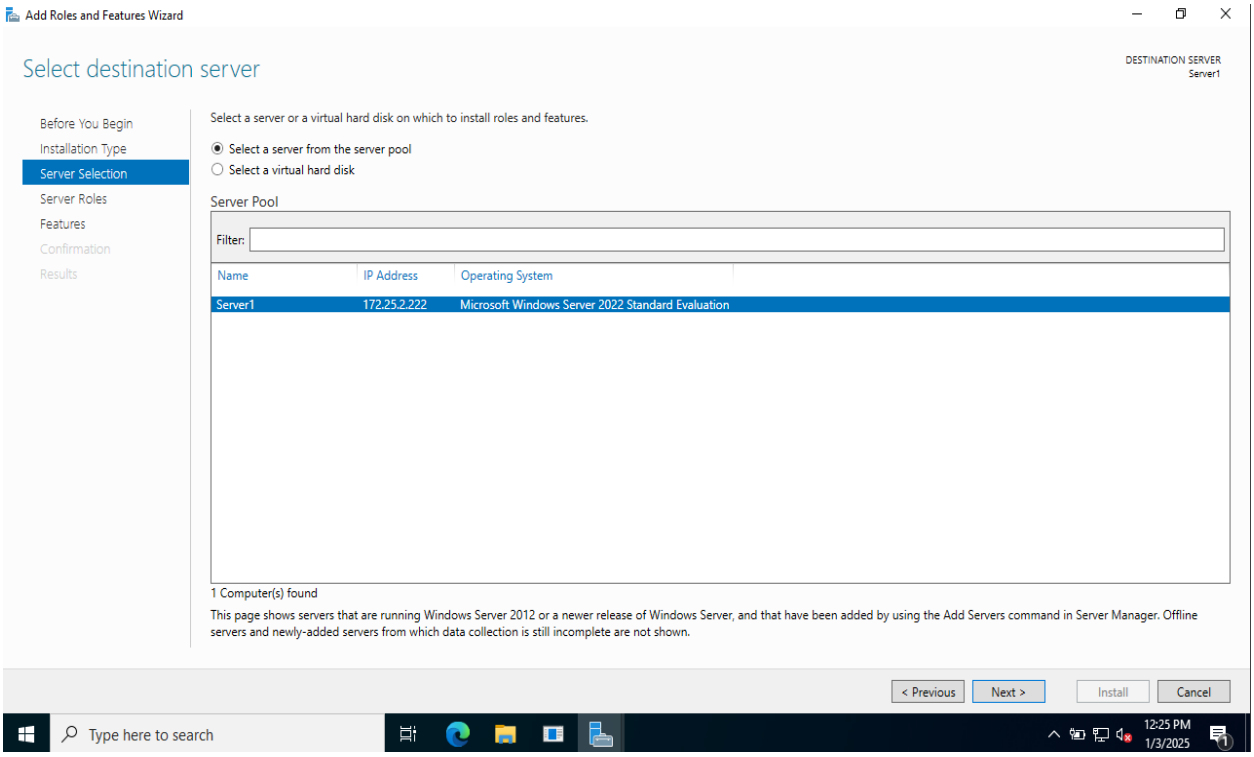

Figure 4: Select Destination Server

STEP 5

Select **"Select a server from the server pool"** and click on the **Next** button. Next, We will be asked to select server roles as shown below:

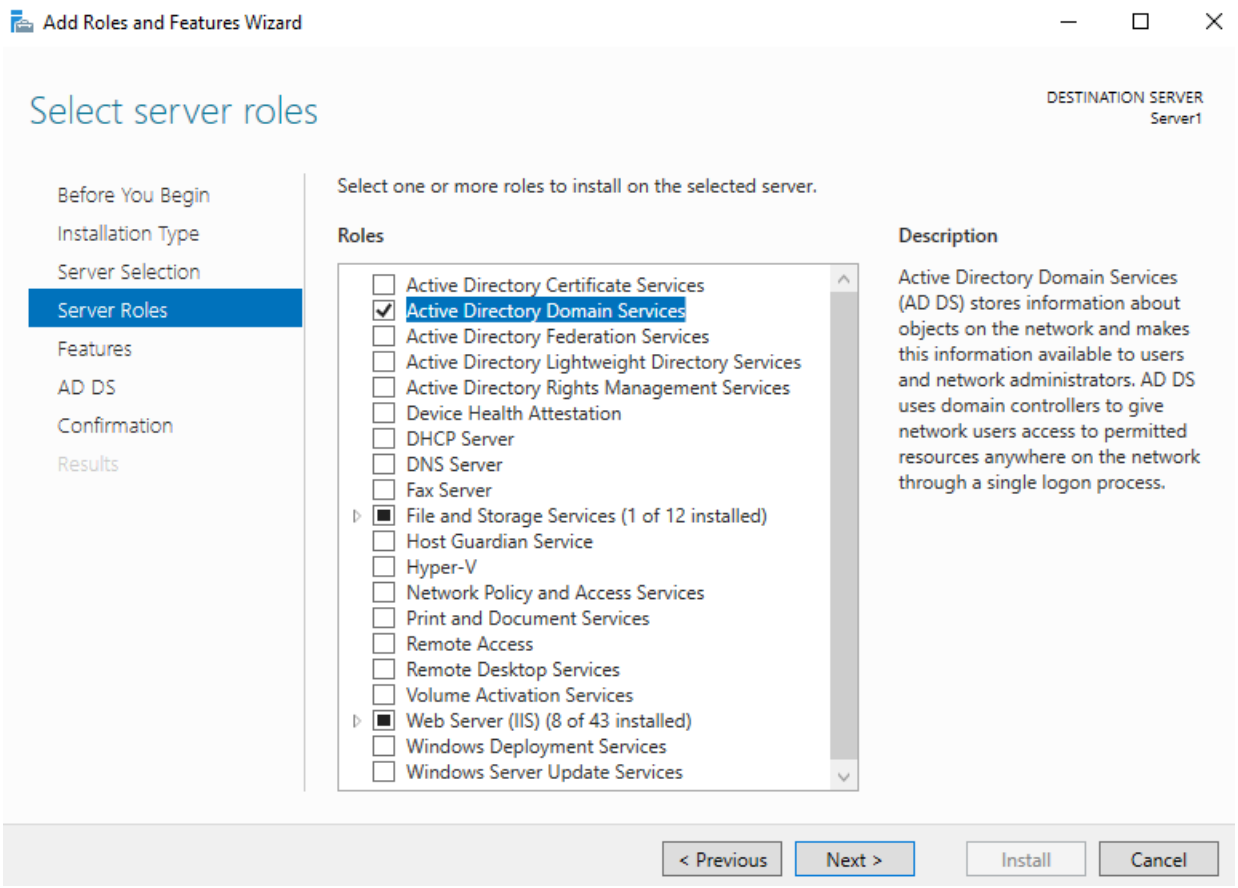

Figure 5: Select Server Roles

STEP 6

Select **Active Directory Domain Services** and click on the **Next** button. We will be asked to select features as shown below:

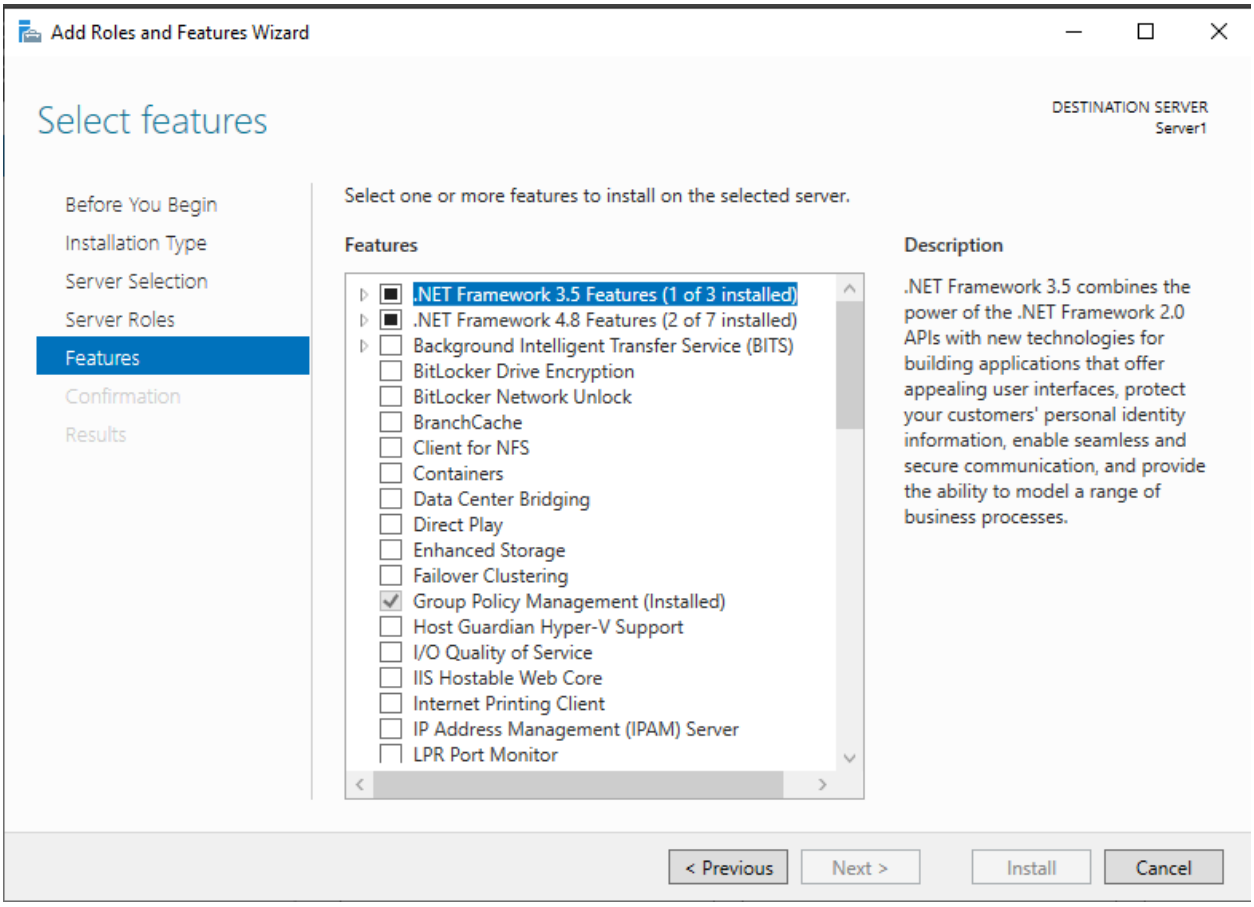

Figure 6: Select Features

STEP 7

Leave all default settings and click on the **Next** button. Next, We should see the confirm installations selections page.

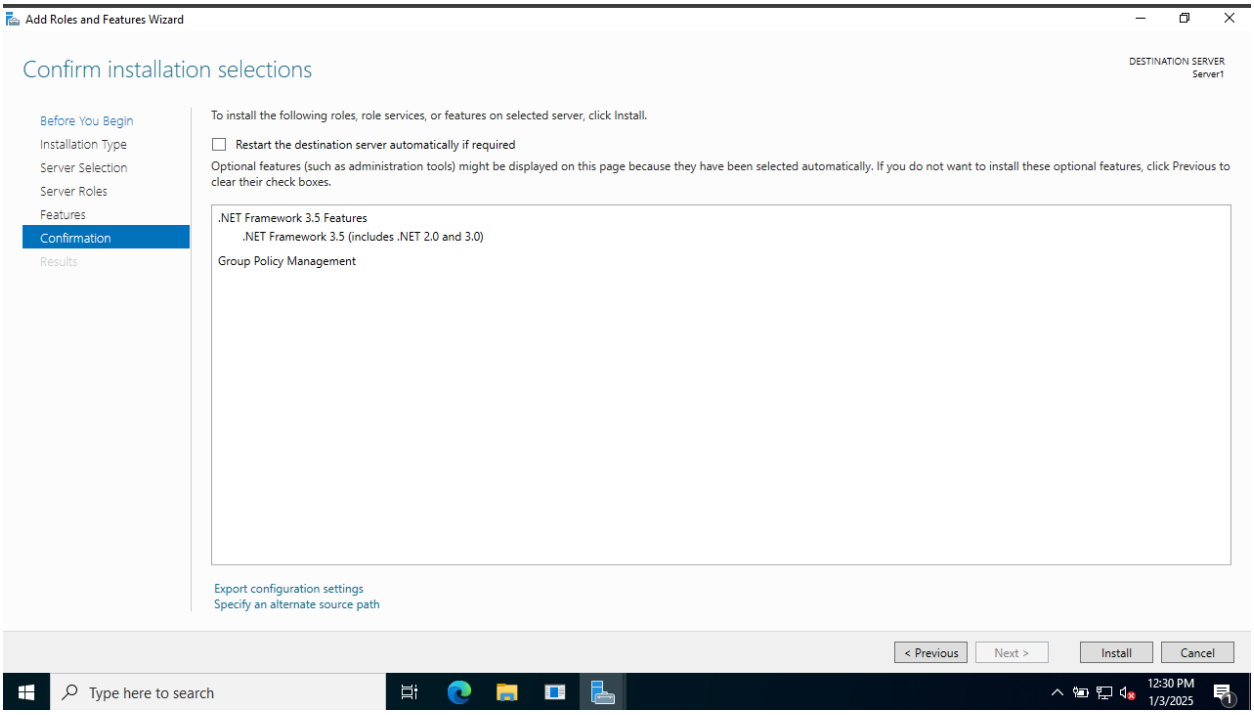

Figure 7: Installation selection

STEP 8

Click on the **Install** button to start the installation. Once the installation has been finished. We should see the following page.

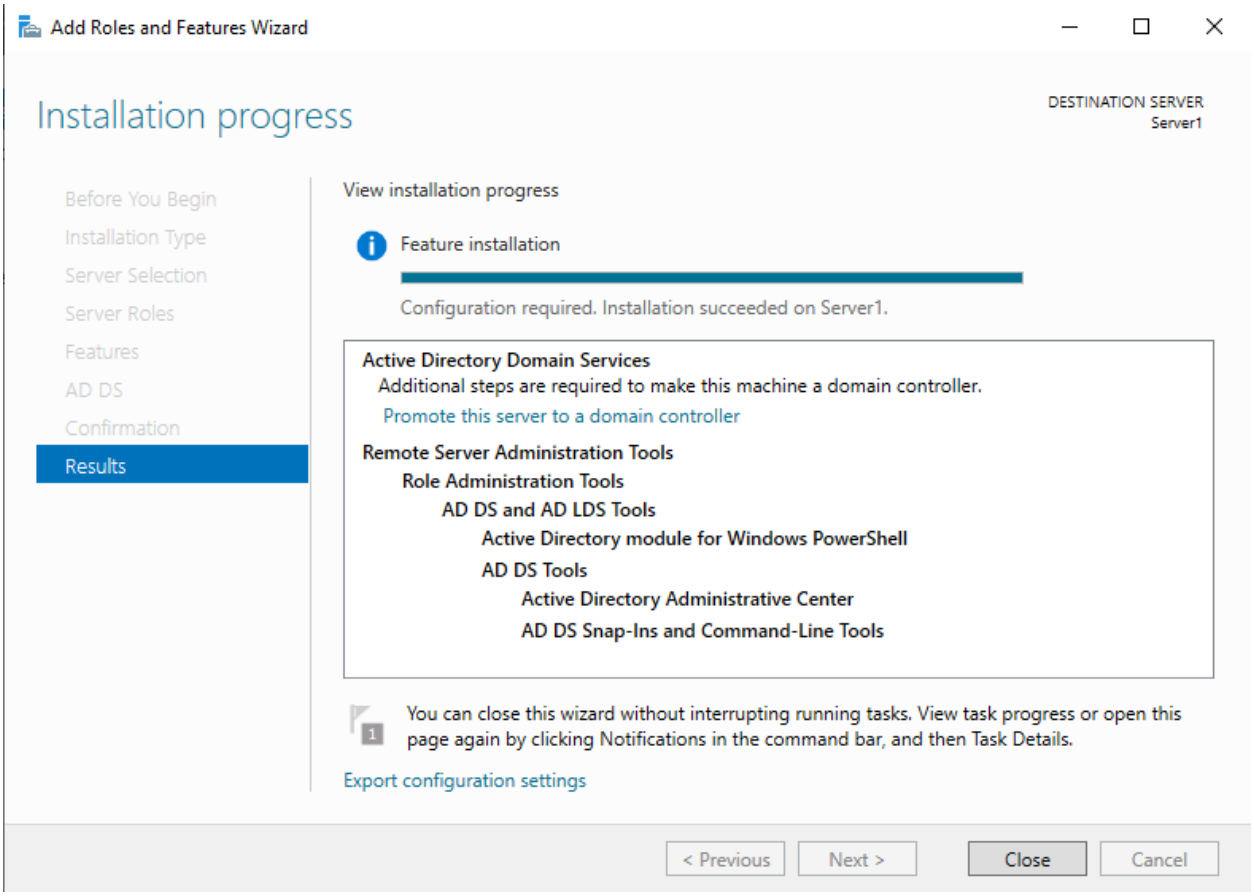

Figure 8: Installation Finished

STEP 9

Click on the **Close** button. We should see the following page.

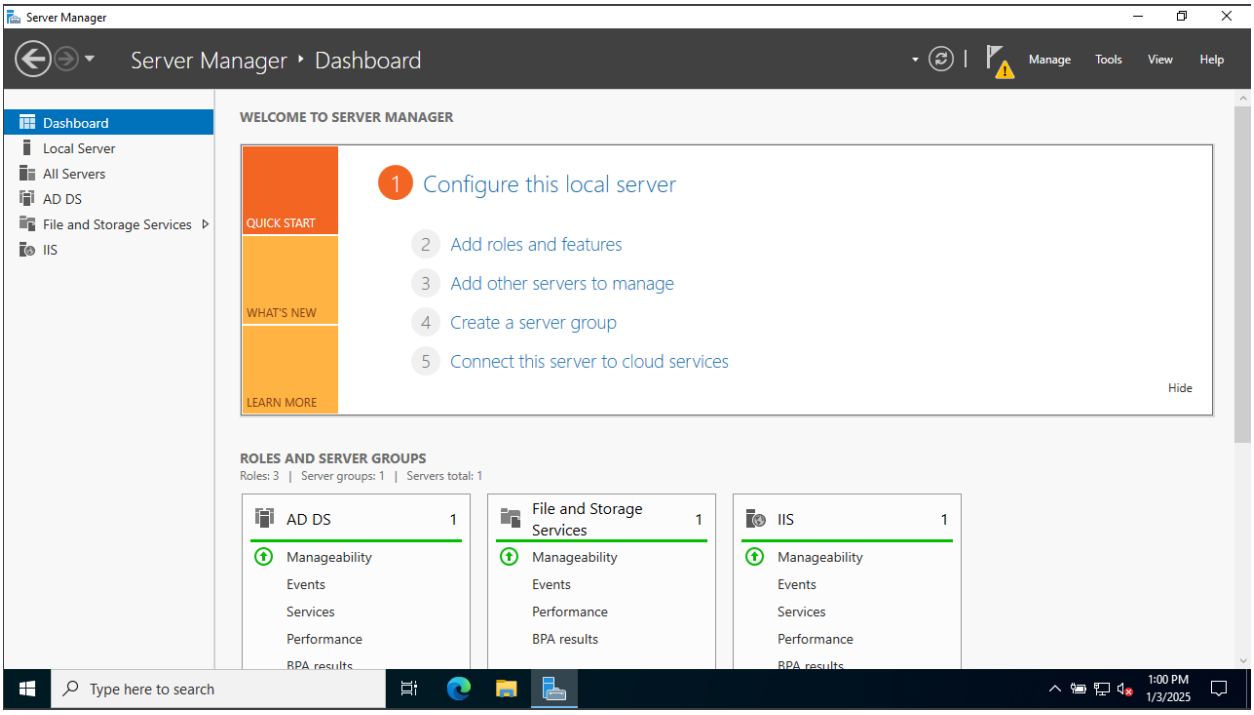

Figure 9: After The Installation

STEP 10

Click on the **yellow notification** icon. We should see the following page:

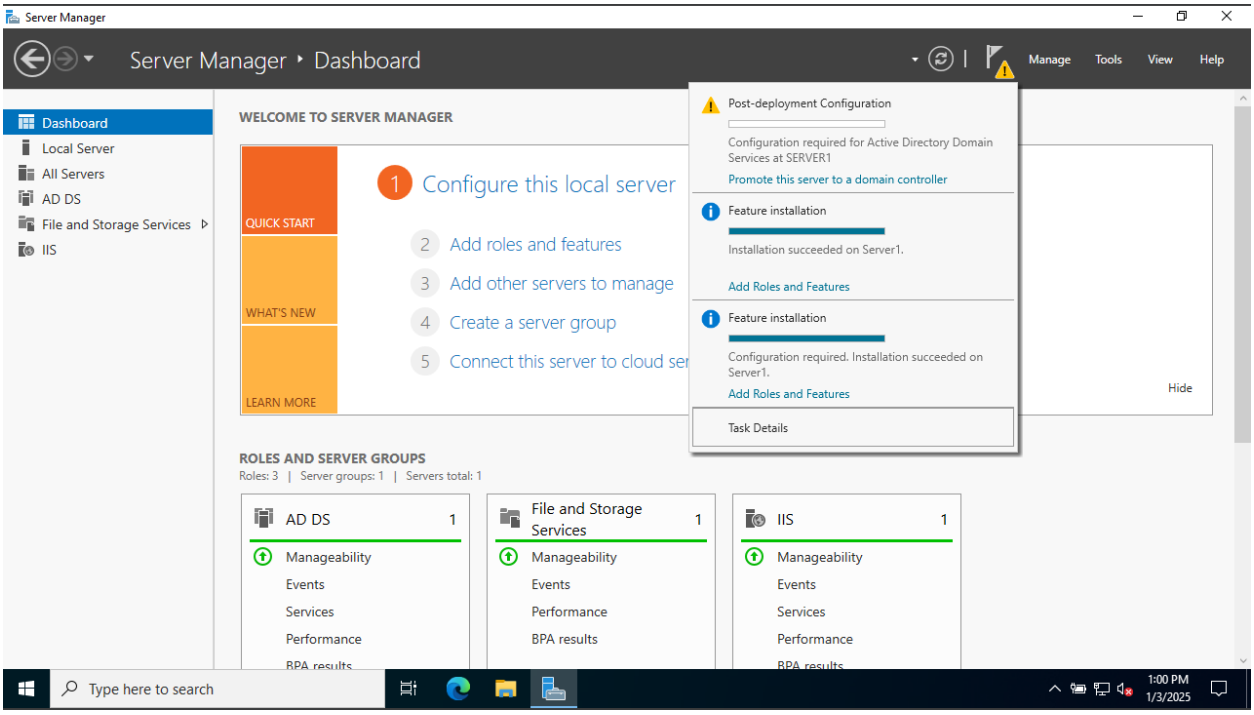

Figure 10: Clicking on Yellow icon

STEP 11

Click on **Promote this server to a domain controller**. We should see the deployment configuration page:

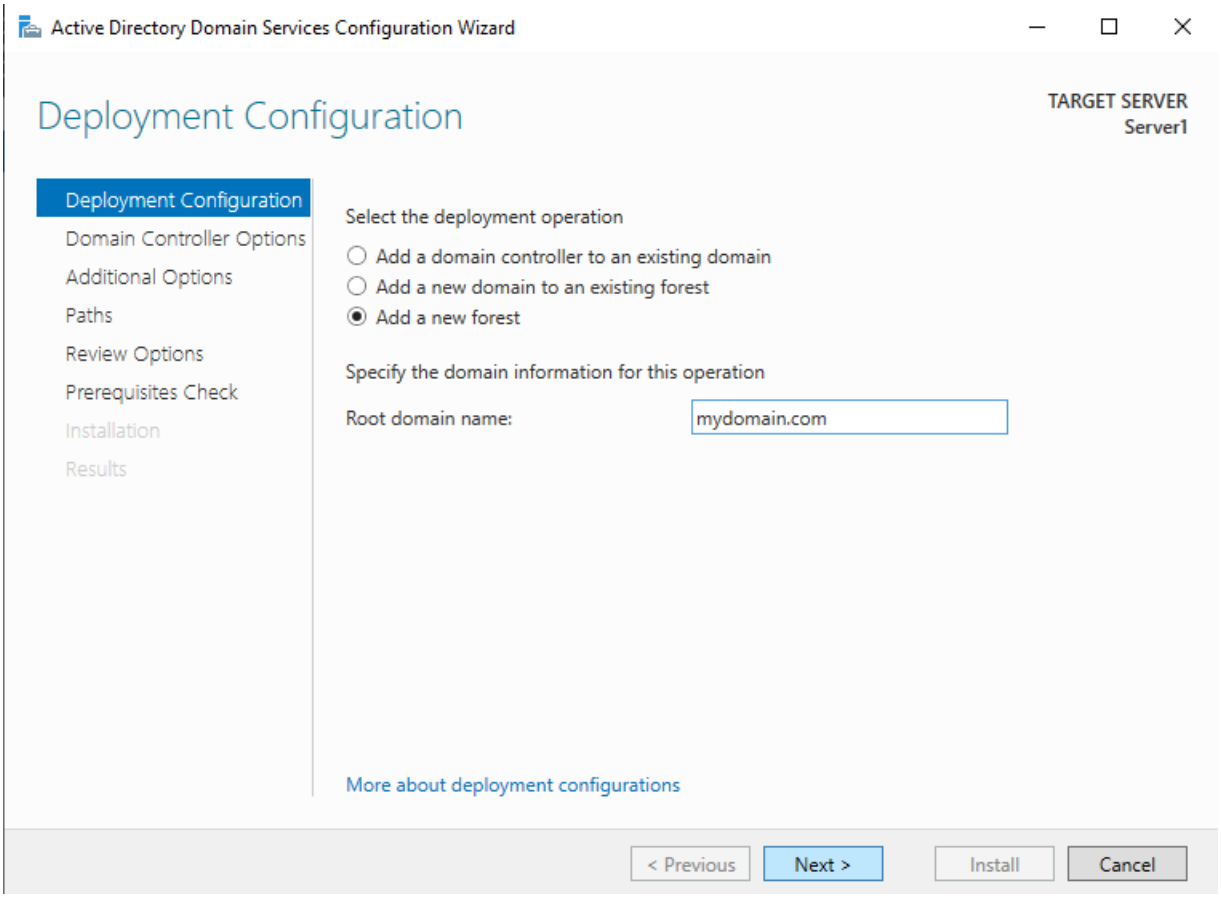

Figure 11: Deployment Configuration Page

STEP 12

Select **add a new forest**, defining our domain name and clicking on the **Next** button. We should see the domain controller options page:

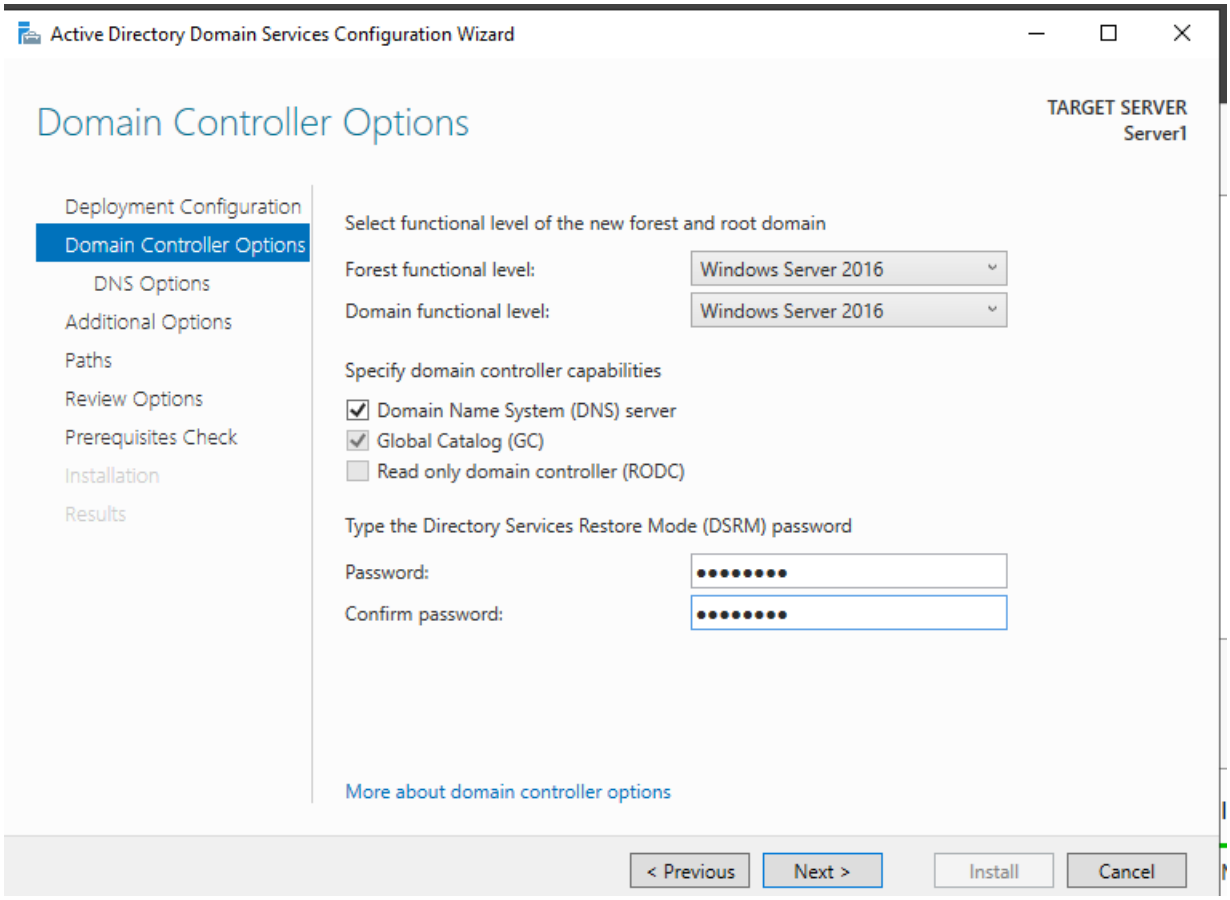

Figure 12: Domain Controller Option

STEP 13

Defining our directory service restore mode password and clicking on the **Next** button. We should see the DNS options page:

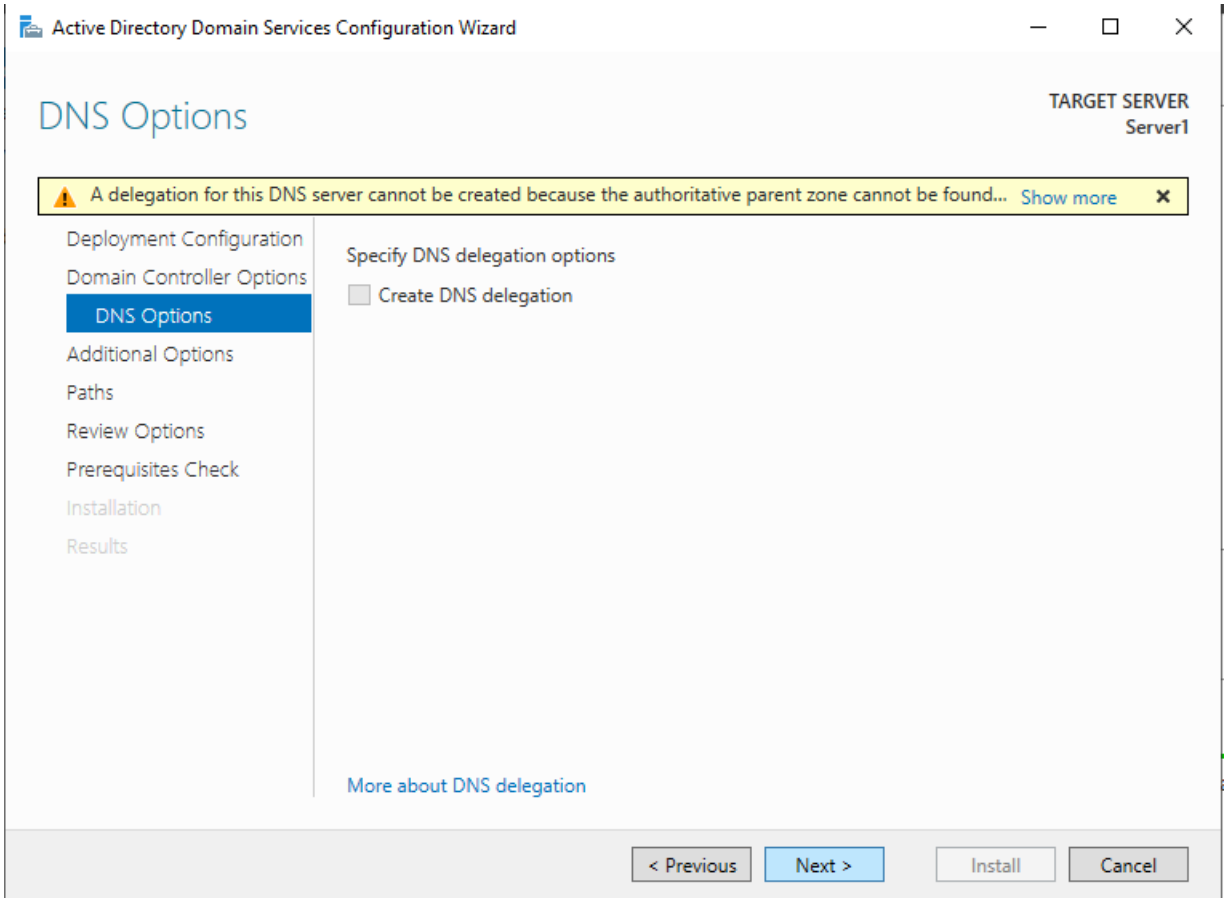

Figure 13: DNS Option Page

STEP 14

Leave the default configuration and click on the **Next** button. We will be asked to set a NetBIOS name as shown below:

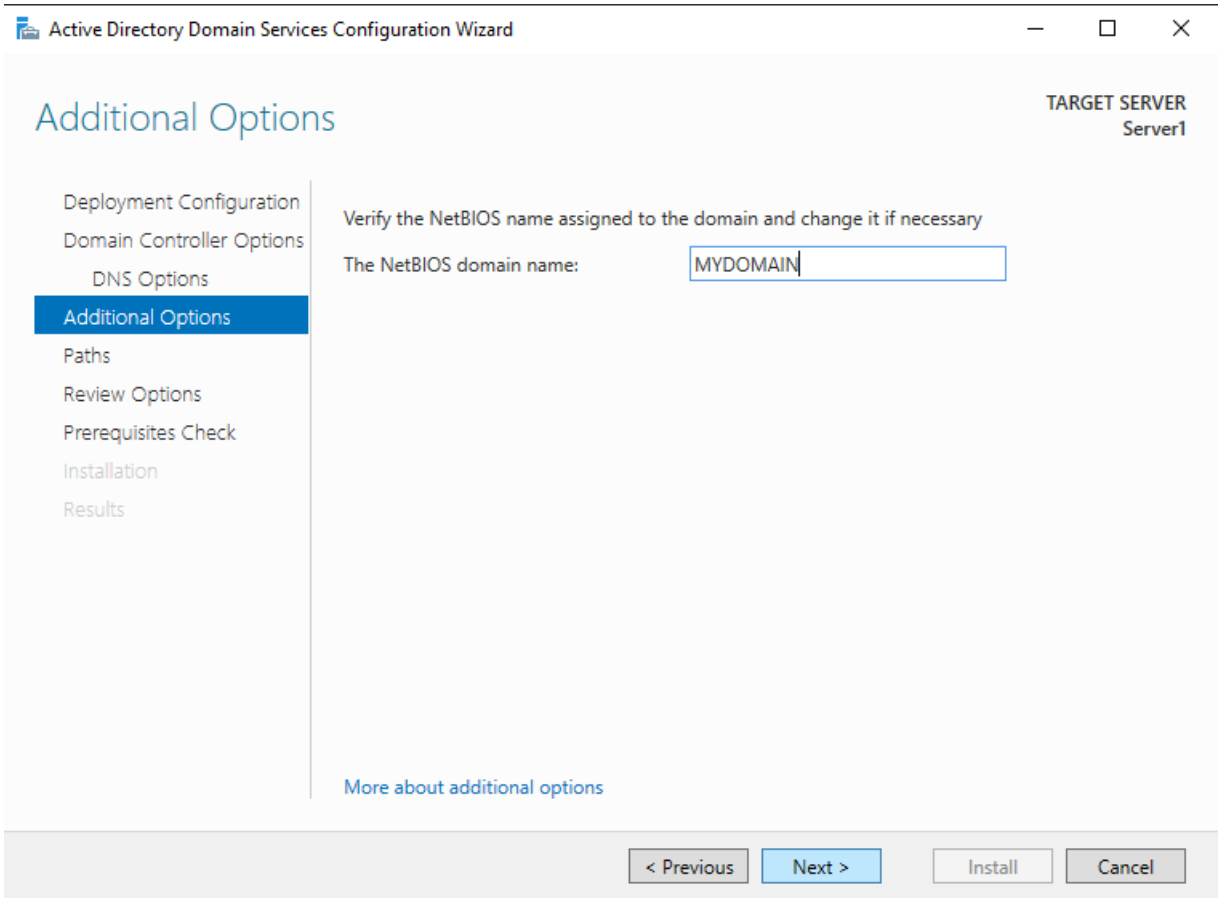

Figure 14: NetBIOS Name

STEP 15

Setting our NetBIOS name and clicking on the **Next** button. We will be asked to define AD DS database path location:

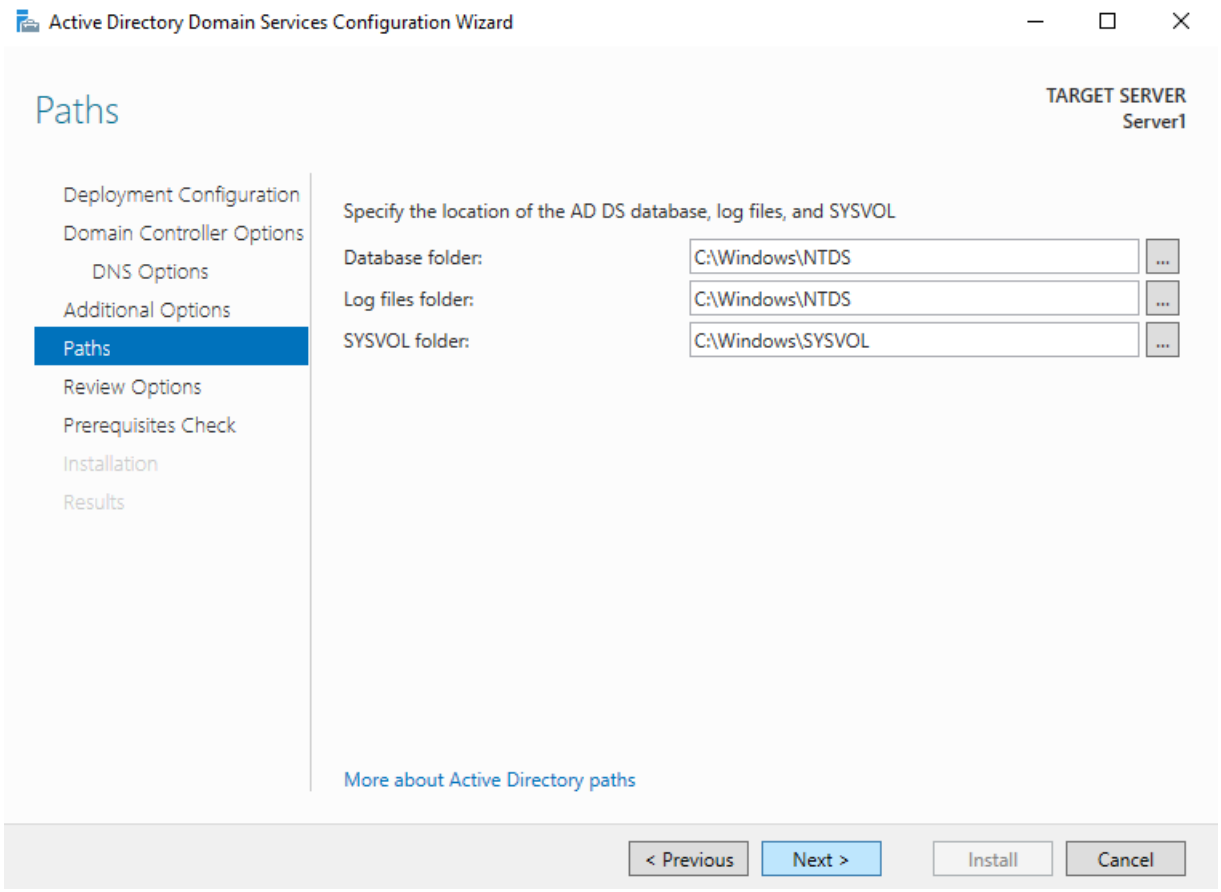

Figure 15: Database Path Location

STEP 16

Leave the default path as it is and click on the **Next** button. We should see the review all options page:

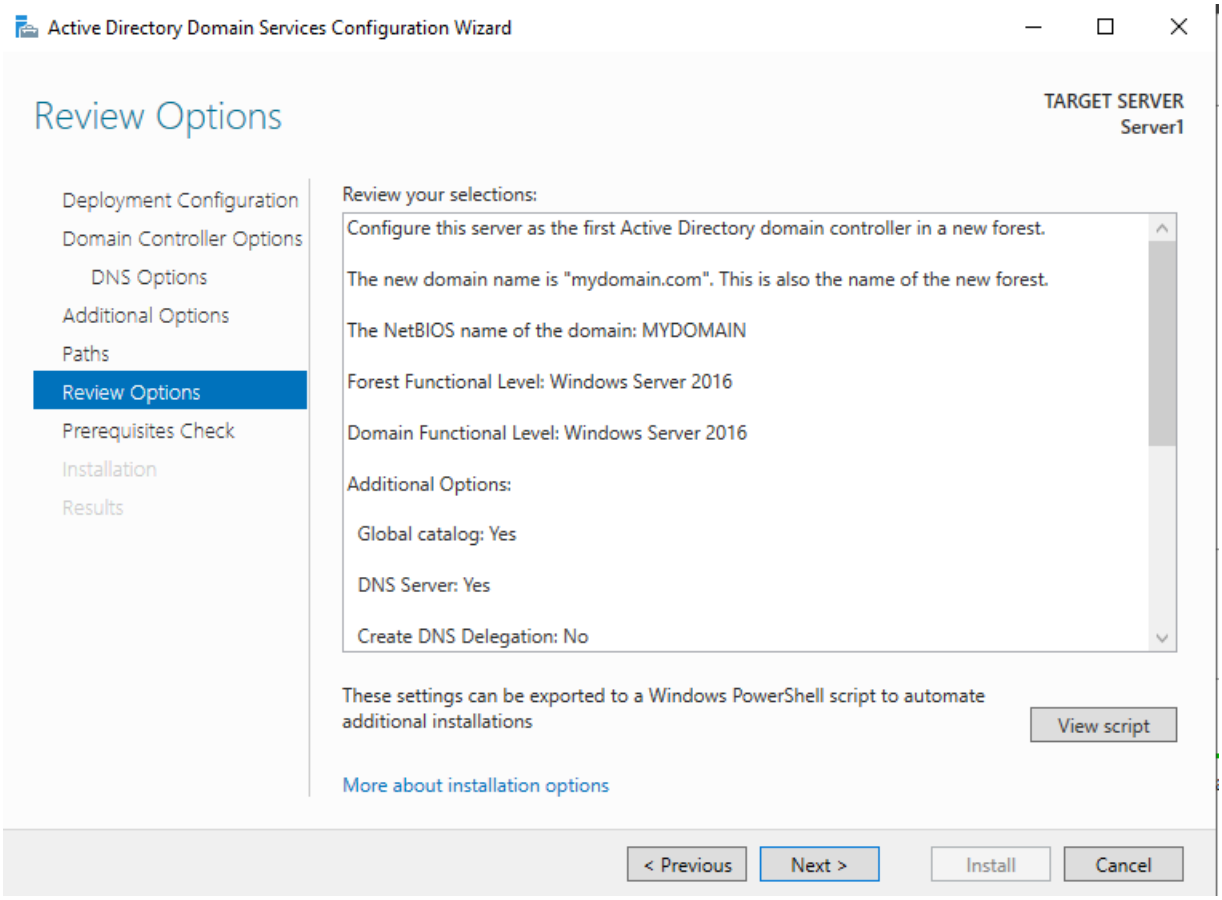

Figure 16: Review All Option Page

STEP 17:

Review all the configurations and click on the **Next** button. We should see the prerequisites check page:

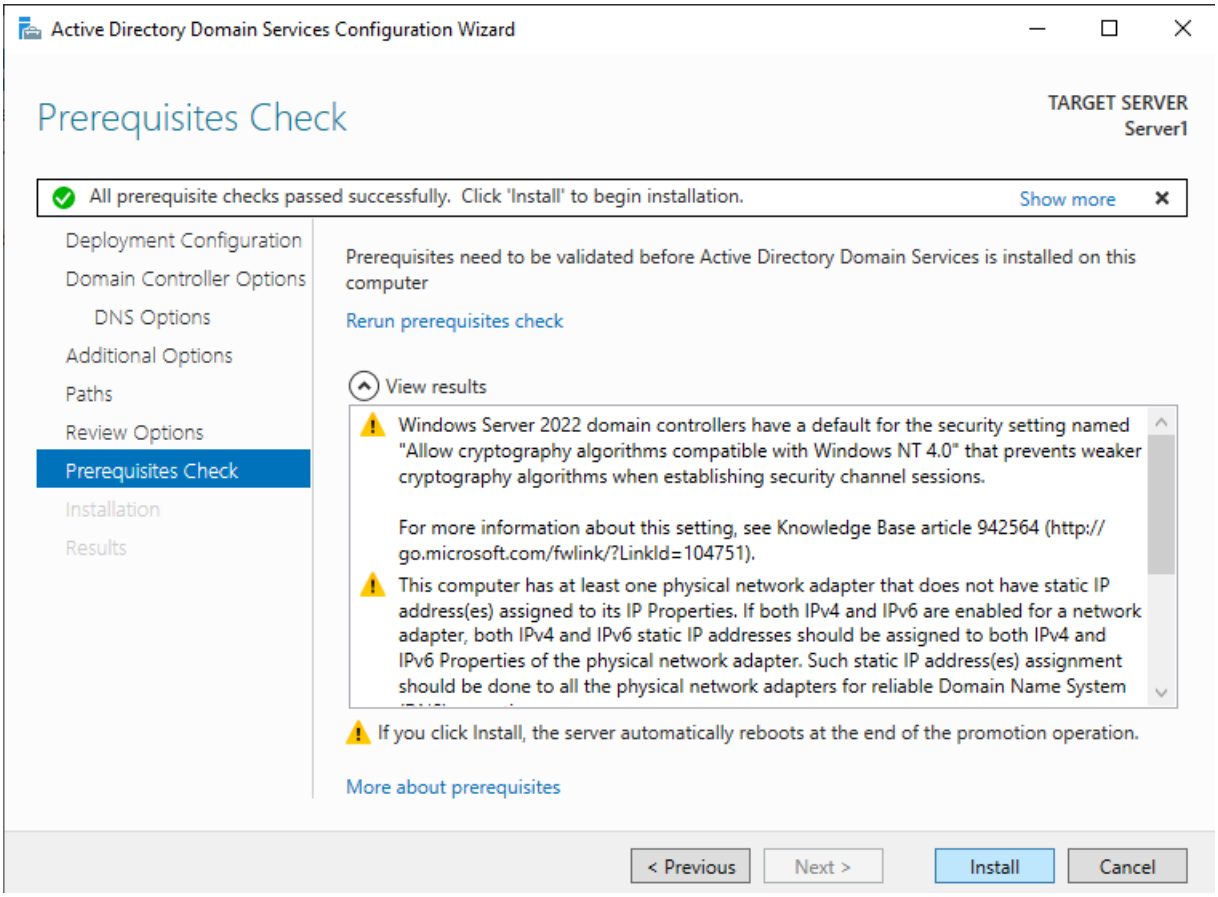

Figure 17: Prerequisites Check Page

STEP 18

Make sure all prerequisite checks are successful, then click on the **Install** button. Once the installation has been finished, our system will be restarted automatically.

Verify Domain Controller

Next, we will need to verify whether the Domain Controller has been set up properly. We can do this using PowerShell.

To confirm the successful installation of the services, we can run the following command in Windows PowerShell:

```
Get-Service adws,kdc,netlogon,dns
```

We should see the status of all services on the following screen:

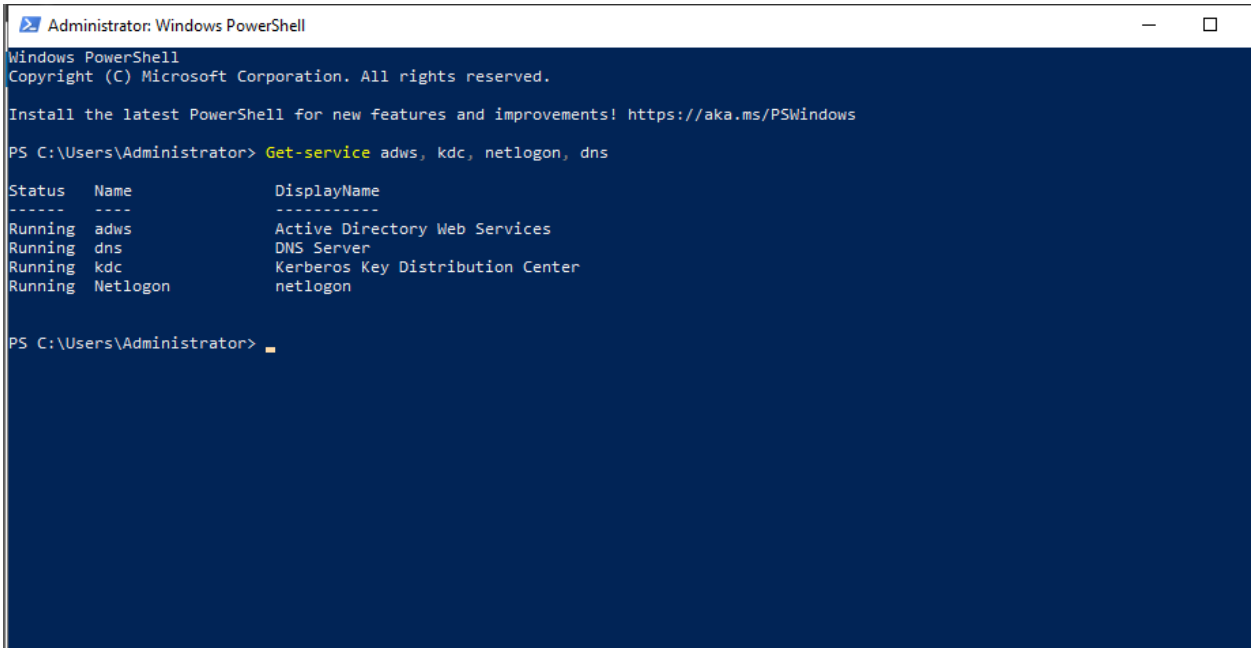

Figure 18: Status Of all Services

To display all the configuration details of the domain controller, run the following command:

```
Get-ADDomainController
```

We should see all the information on the following screen:

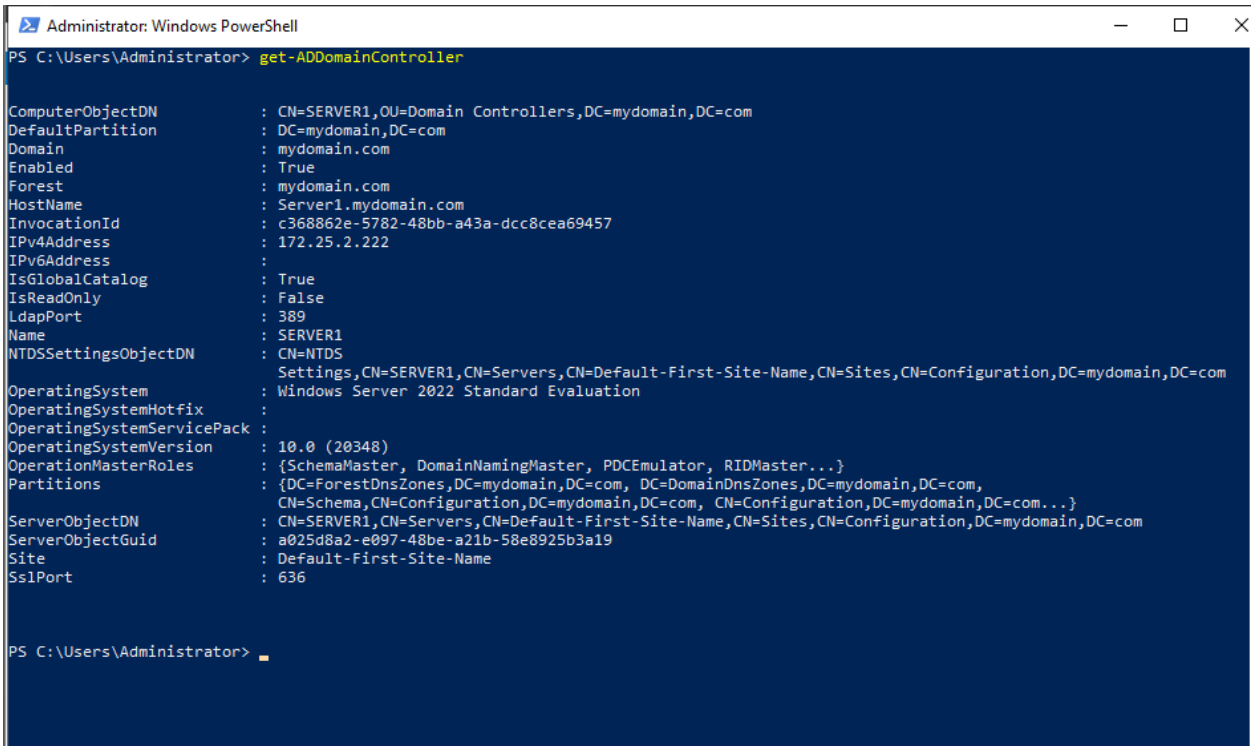

Figure 19: Displaying all Configuration Details

To get detailed information about our domain, run the following command:

```
Get-ADDomain mydomain.com
```

We should see the next screen:

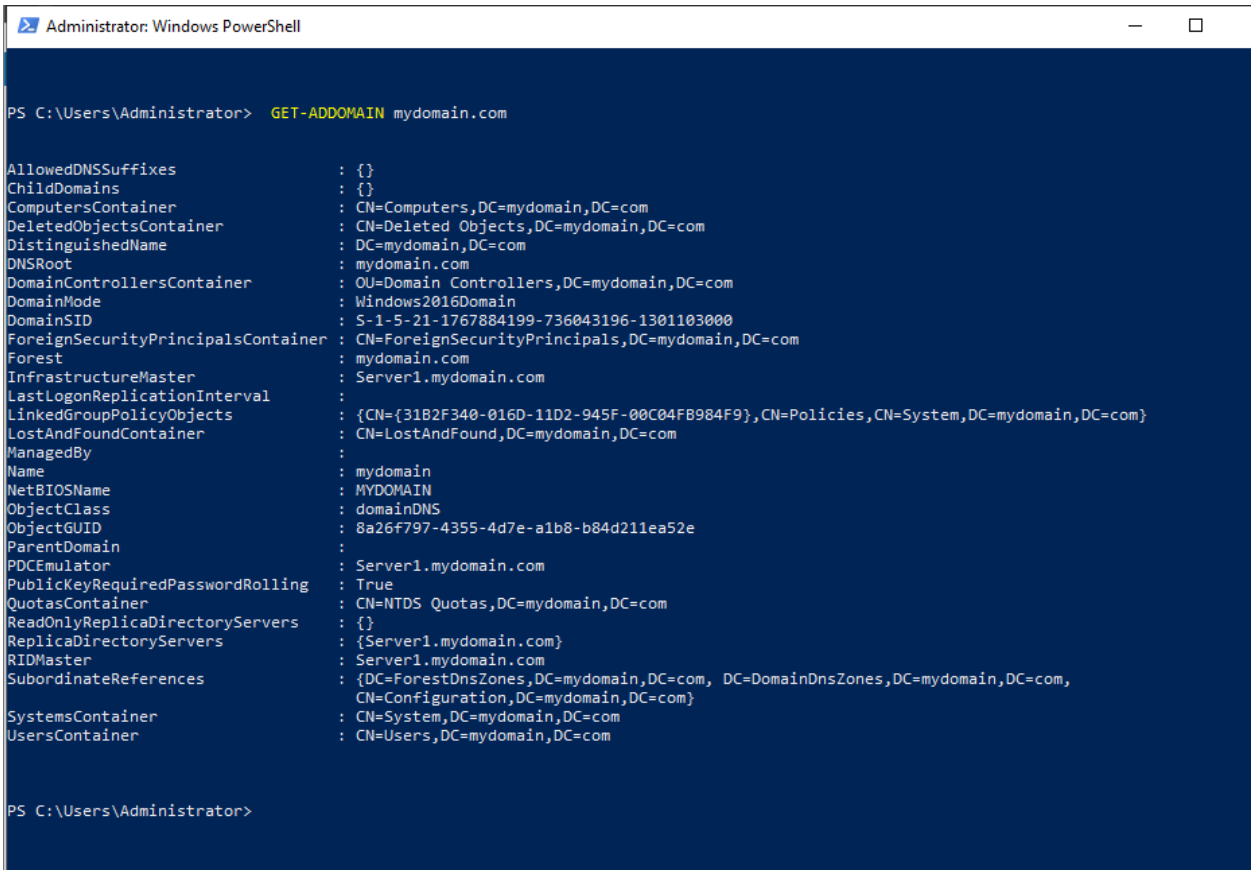

Figure 20: Detailed Information about our Domain

To display our Active Directory Forest details, run the following command:

```
Get-ADForest mydomain.com
```

We should see the next screen:

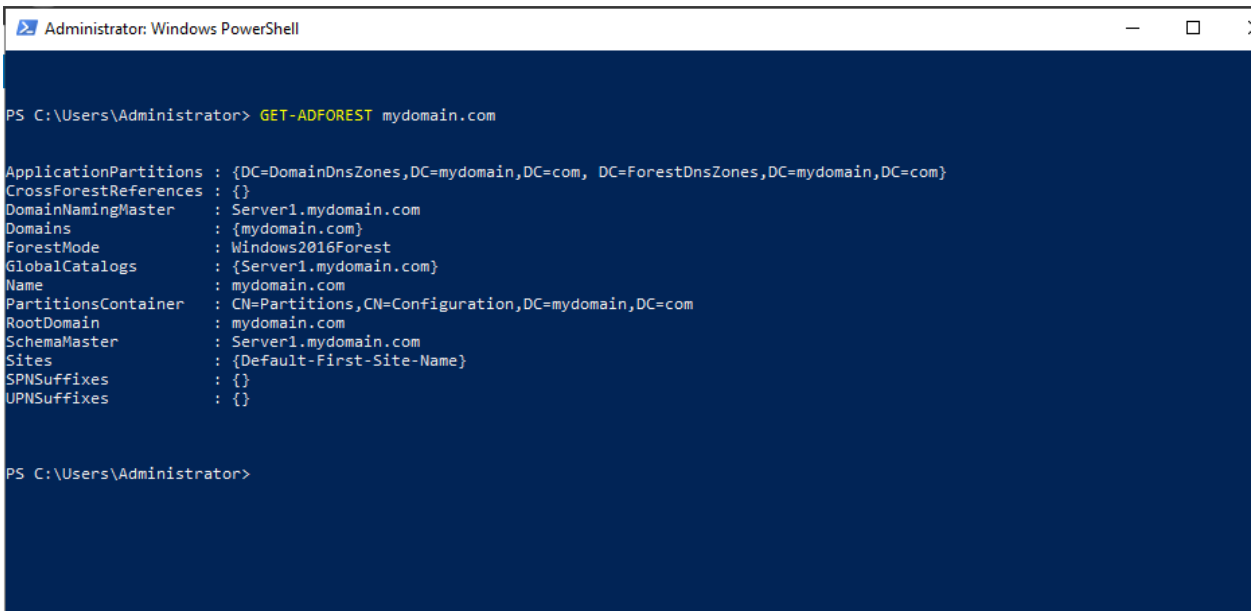

Figure 21: Displaying Active Directory Forest Details

Conclusion

This log provides a detailed record of the step-by-step process for setting up an **Active Directory Domain Controller** in a **Windows Server 2022** environment. Through this process, we have successfully installed Active Directory Domain Services (AD DS), promoted the server to a Domain Controller, and configured essential settings such as the domain name, Directory Services Restore Mode (DSRM) password, and NetBIOS name.

The log also demonstrates how to verify the setup using PowerShell commands to check the status of services, retrieve configuration details, and ensure the overall health of the Active Directory environment. These verification steps provide confidence in the deployment and help us maintain a reliable and secure network infrastructure.

By following the documented steps and visual references, we can ensure a clear understanding of the process and create a valuable resource for troubleshooting, auditing, and future enhancements to the network. This log serves as a foundation for implementing an efficient and secure Active Directory environment that supports centralized management and seamless resource access.