Al-Najah National University
Network Administration Lab

Windows Server 2022 And Active Directory

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1 Abstract

The experiment shows the installation of the windows server beside the active directory domain service. Also, it builds enough understanding to manage the active directory as an administrator.

2 Introduction

Active Directory (AD) is a directory service/identity provider that enables administrators to connect users to Windows-based IT resources. Further, with AD, IT can manage and secure their Windows-based systems and applications. AD stores information about network objects (e.g. users, groups, systems, networks, applications, digital assets, and many other items) and their relationship to one another. So Windows Active Directory is used in managing users, computers, permissions, and file servers. Admins can use AD to create users and grant them access to Windows laptops, servers, and applications. They can also use AD to control groups of systems simultaneously, enforcing security settings and software updates. Where Active Directory functional level determines what capabilities of Active Directory Domain Services (AD DS) are available for a particular forest or domain. A forest is the most top part of Active Directory's logical structure, which also includes objects, trees, and domains. It describes a collection of trees, which denote a collection of domains. On the other hand, a domain is a collection of users, computers, and devices that are part of the same Active Directory database. And finally, A tree could be used to group all those domains as branches belonging to the same tree, so to speak. An organization that has multiple trees could then group them into a forest. So the functional levels are specified in terms of Windows Server versions, as each version update brings with it a host of new AD DS functionalities.

3 Required Resources

In this experiment, we need **2PC** and enabling the **Hyper-V** on both. On PC1 install the **windows10** which is the client, and on PC2 install the **windows server**.

4 Procedure

4.1 Enable the Hyper-V role through Settings

1. On both PC1 and PC2, we enable Hyper-V to prepare a suitable environment for the server and the client by following these steps:
   1. Right-click on the Windows button and select 'Apps and Features'.
   2. Select Programs and Features on the right under related settings.
   3. Select Turn Windows Features on or off.
   4. Select Hyper-V and click OK.

   Figure 1 shows the final window to enable Hyper-V.
   Then when the installation has completed we restart our computer.

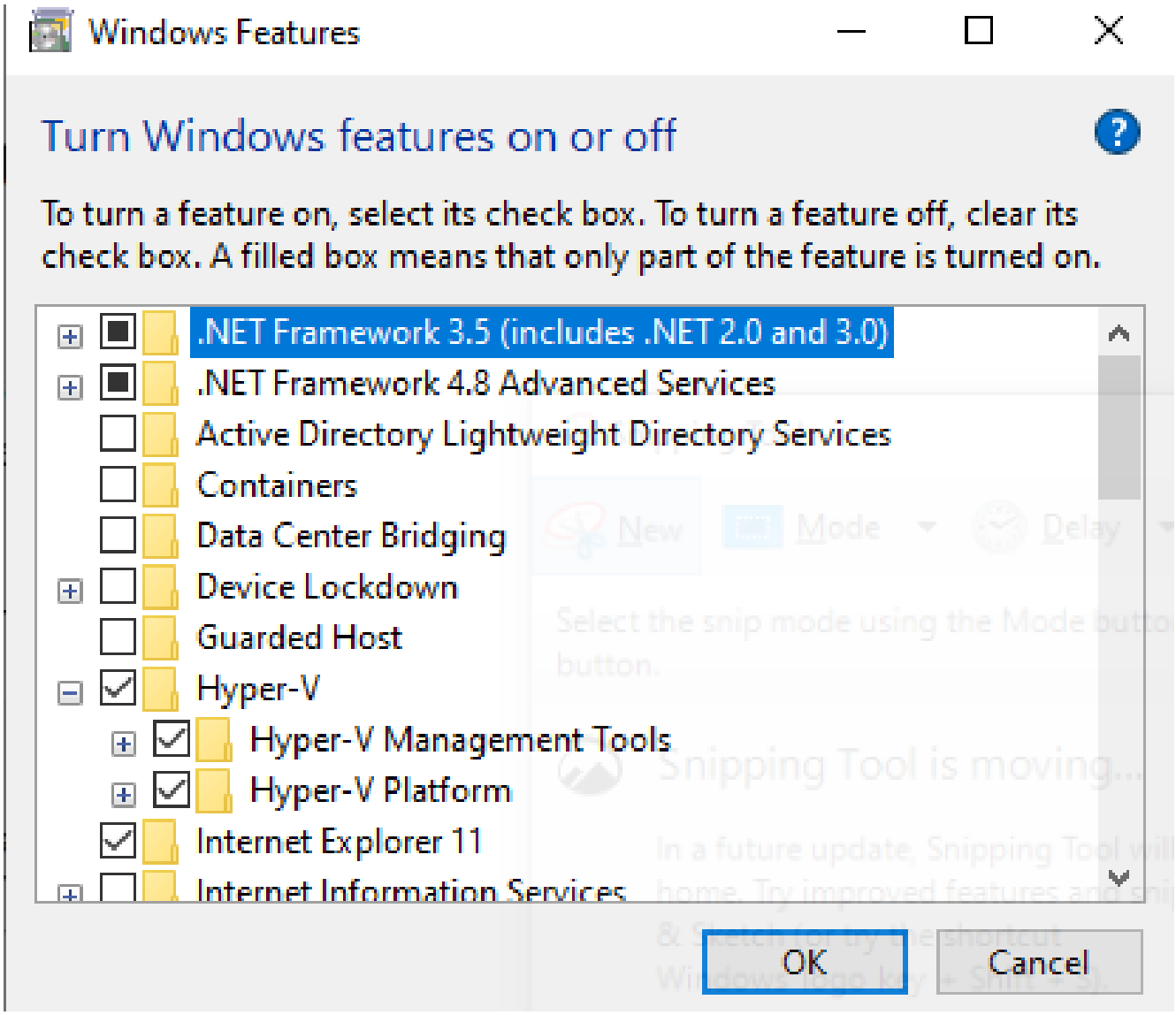

Figure 1: Enable the Hyper-V.

4.2 VM Creation

At first, we open the virtual switch manager inside Hyper-V and create a new external virtual switch so that our VMs have direct bridge access to our physical network as figure 2 shows.

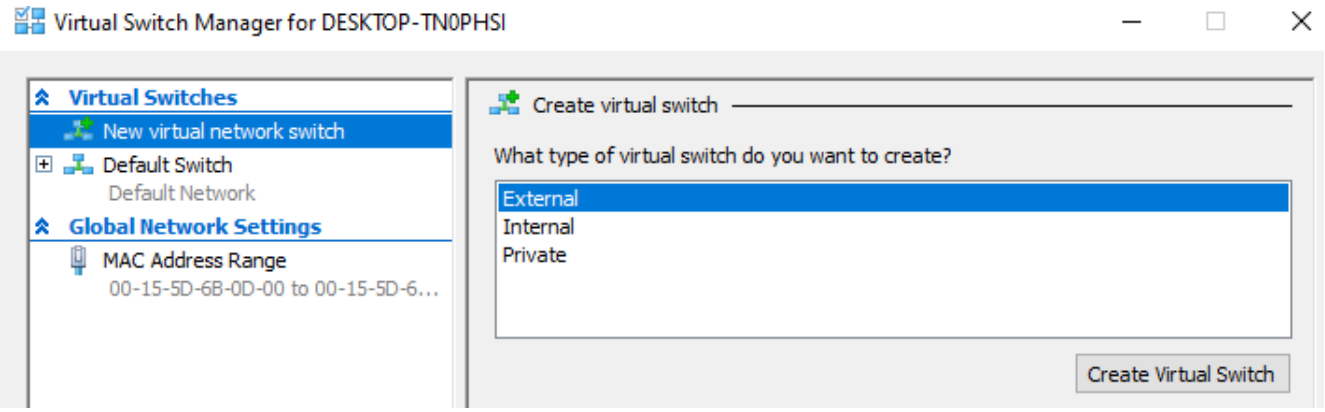

Figure 2: Virtual Switch

1. On PC1 we create a new Windows server 2022 VM named GRP4DC and on PC2 we create A windows 10 VM named GRP4Client.
2. Then we follow these steps to create both VMs:
   (a) We open Hyper-V then Quick Create.
   (b) Click local installation source, Change Installation source, and chose the Windows2k22.iso file for the server and windows10.iso for the client .
   (c) Open more options and give the VM a proper name as mention in step 1.
   (d) Click Create Virtual Machine
   (e) Edit the settings of the virtual machine before starting it and give it 4 GB of Memory.
   (f) Start the machine and complete the installation use P@$$w0rd as a password for all VMs.

4.3 Active Directory

1. On PC2, which has VM for the server, we log in as local administrators.
2. After the server manager opens we click on Local Server on the left-hand side of the window to setup the configuration.

3. Then we click on IPv4 Address assigned by DHCP beside the Ethernet entry and Open the Ethernet properties, and set the server IP address configuration as figure 3 shows.

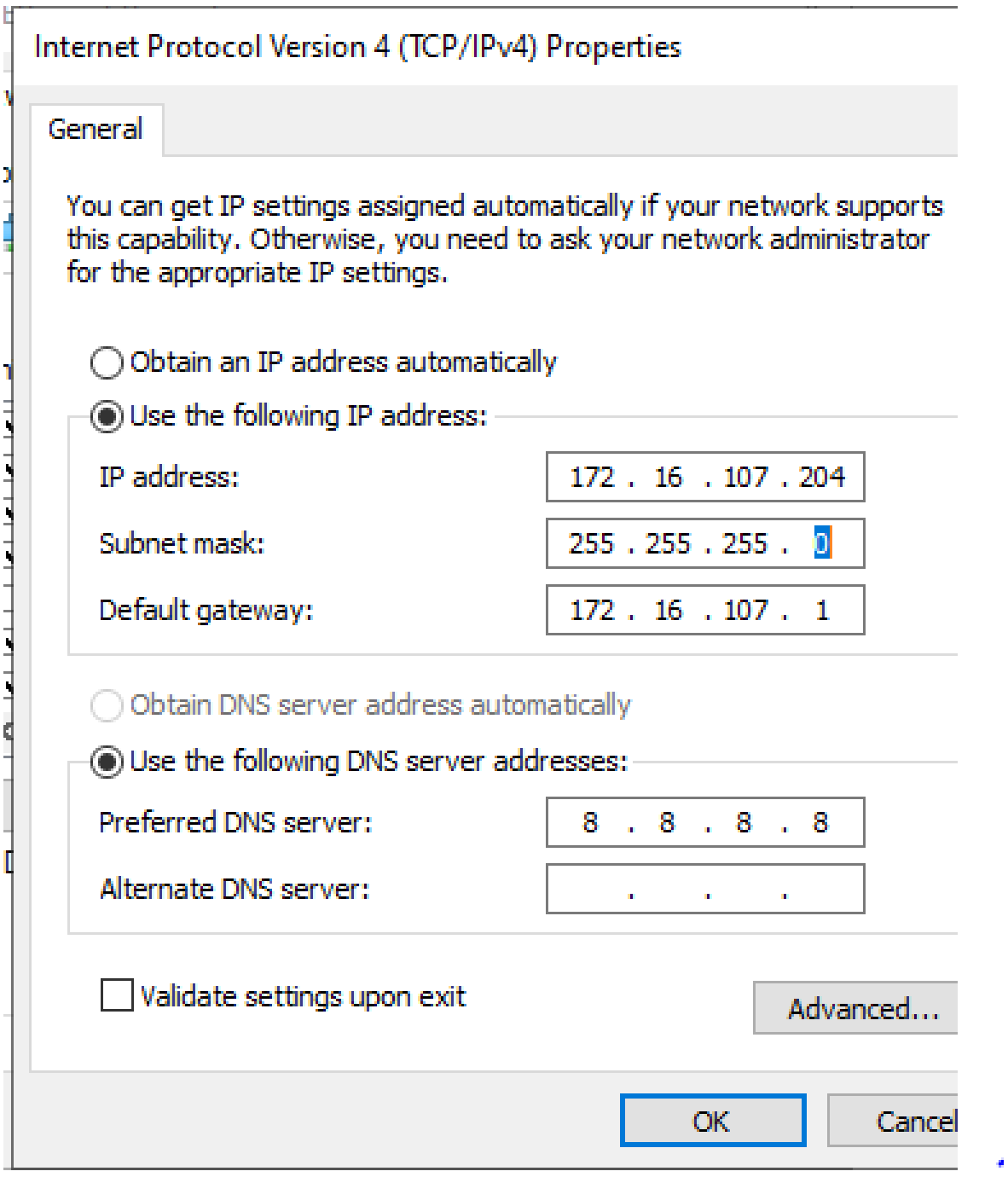

Figure 3: Set the server IP address configuration

4. Also, in the server manager window, we click the current computer name, then Change and set the server name to **GRPxDC** as figure 4 show. To take effect need to reboot our VM for saving the changes.

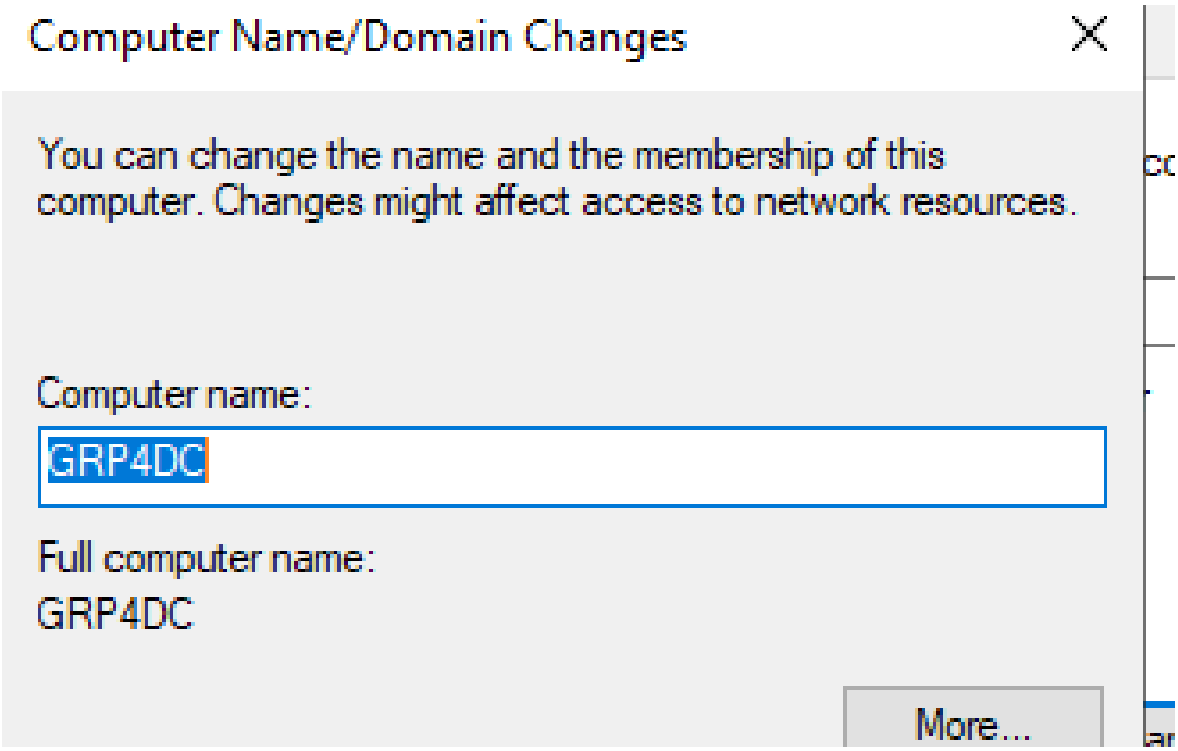

Figure 4: Computer Name.

5. After that, in server manager, we click Add roles and features it will open the Add Roles and Features wizard, then we keep clicking Next until we get to the Select Server Roles screen, from Roles tick “Active Directory Domain Services” a prompt will show what associated features this role has. Then we click on “add features” to add those. Then click Next to continue, we keep clicking Next and then Install as figure 5 shown.

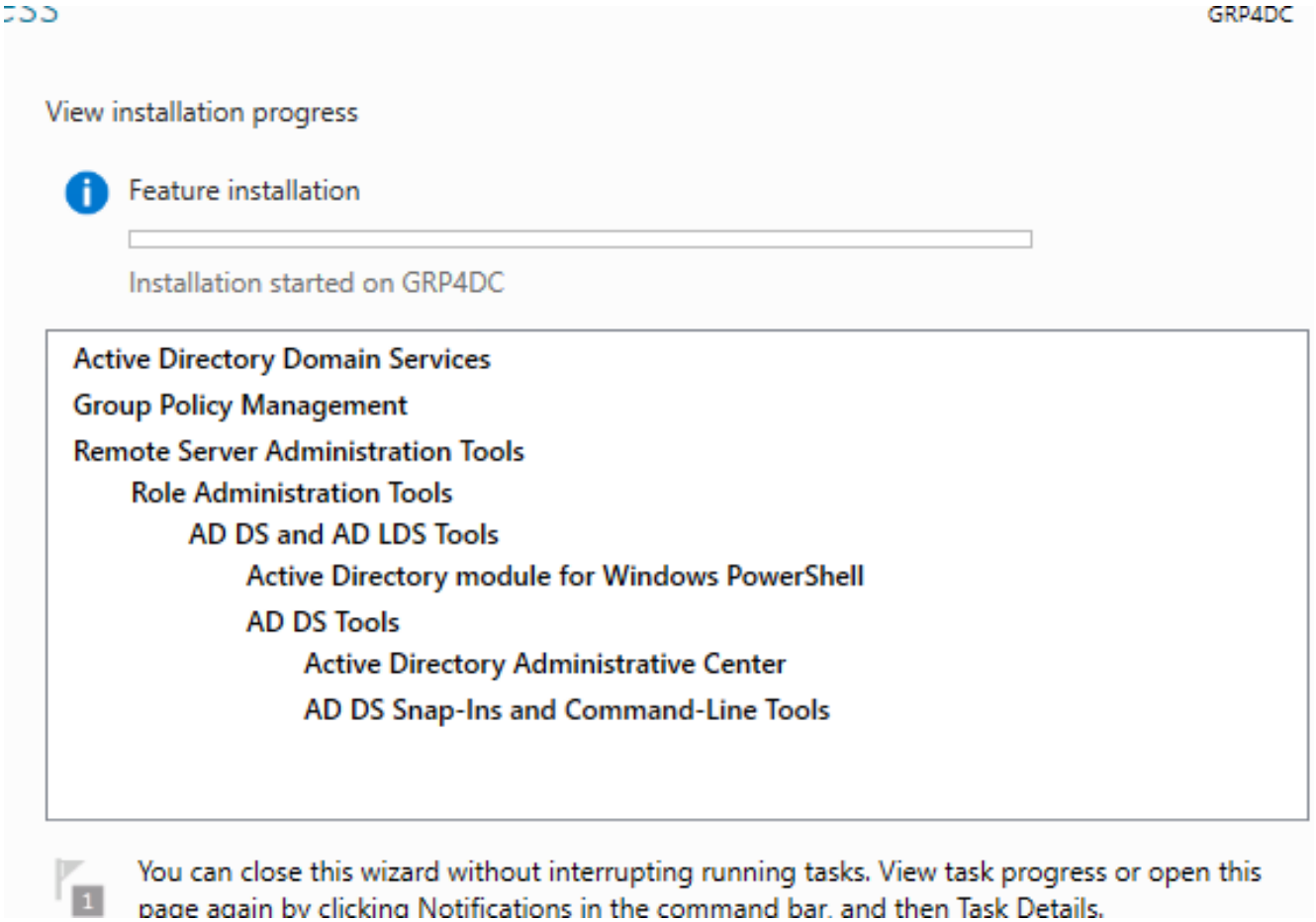

Figure 5: Computer Name.

6. Once installation completes, we click on “Promote this server to a domain controller” which will open the active directory configuration wizard. So we add the domain name and the other configuration as shown in figure 6 that review all the configuration changes.

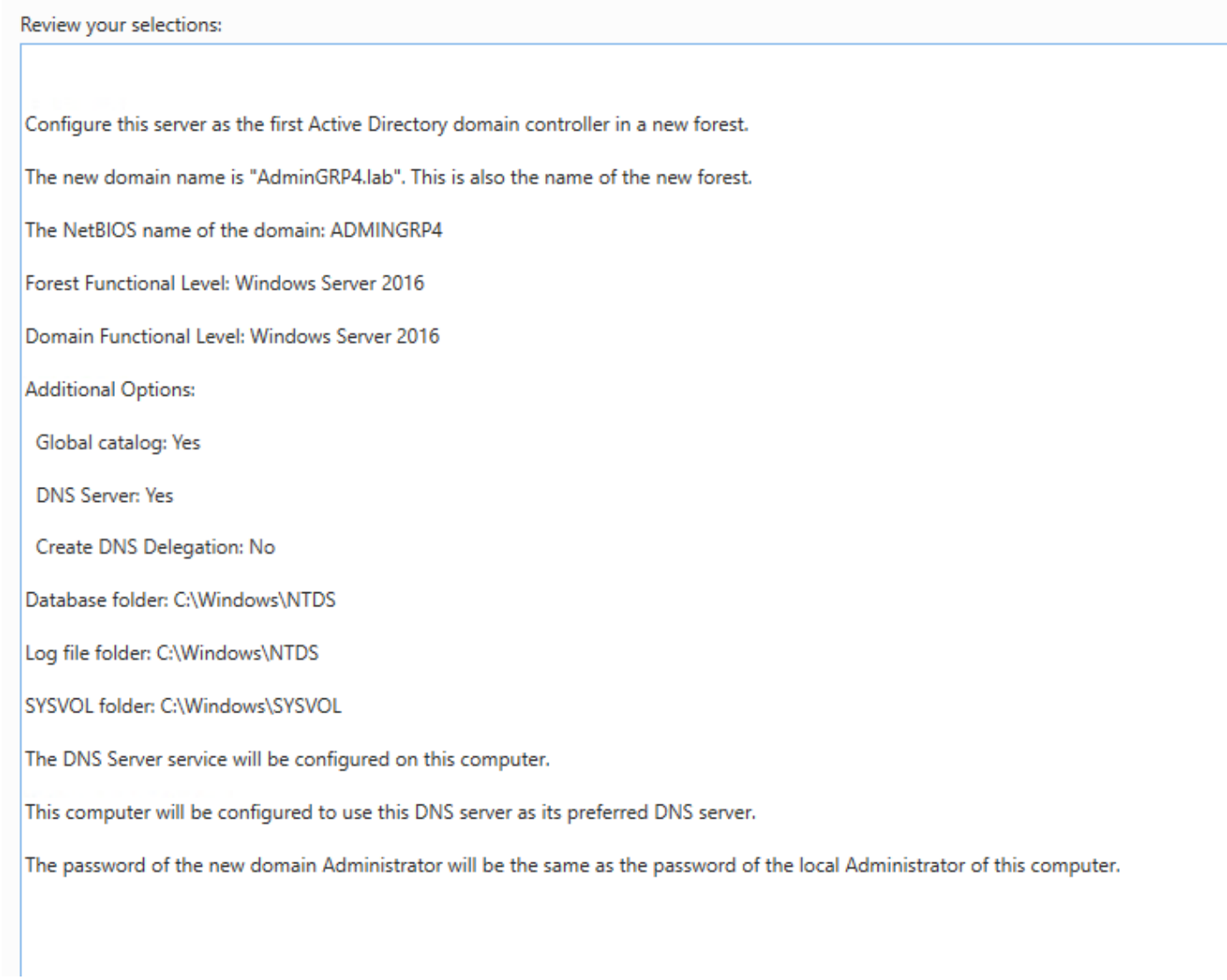

Figure 6: Active directory configuration

7. After that, the other window will do a prerequisite check. It needs validation before the active directory domain service is installed, So when all prerequisites checks passed successfully as shown in figure 7. We click on install to begin the installation process..

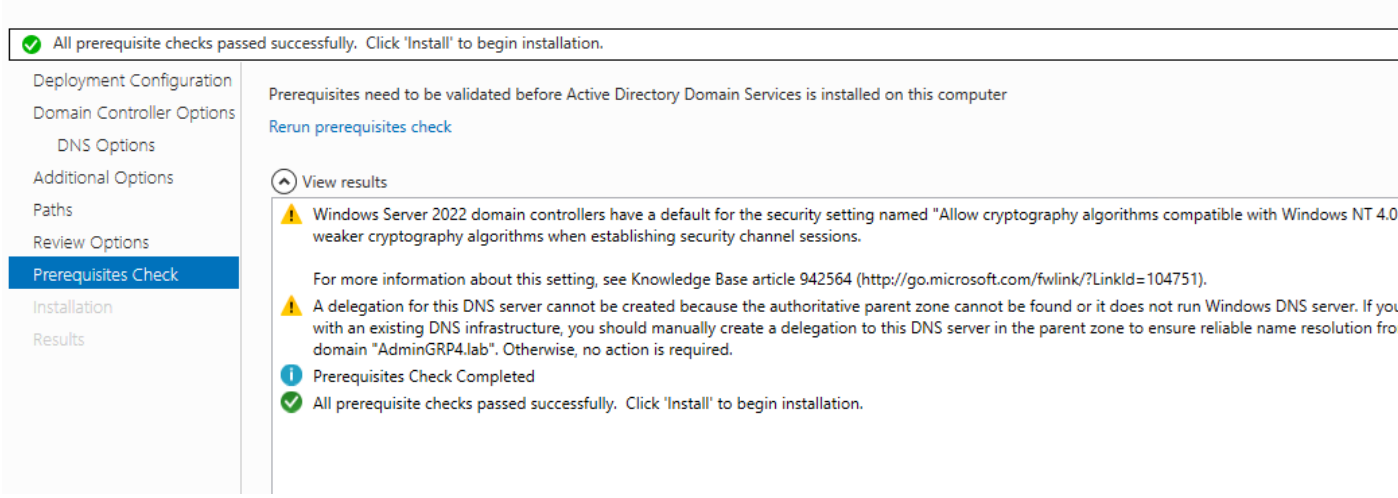

Figure 7: prerequisite check

8. Then, we open "Active Directory Administrative Center" to create a new user which name is **student** as shown in figure 8 to be able to log in using the username and the password that we create, to be under our domain. After that, we create a computer object with the same name as the client computer, as shown in figure 9. The computer object is important because it is the way that the user and the domain controller communicate.

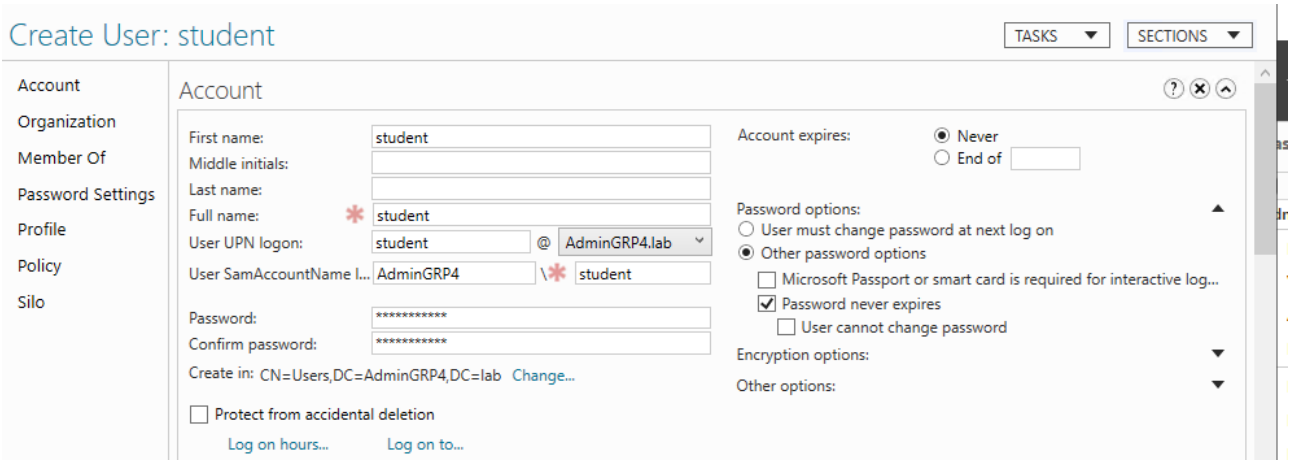

Figure 8: Create new user

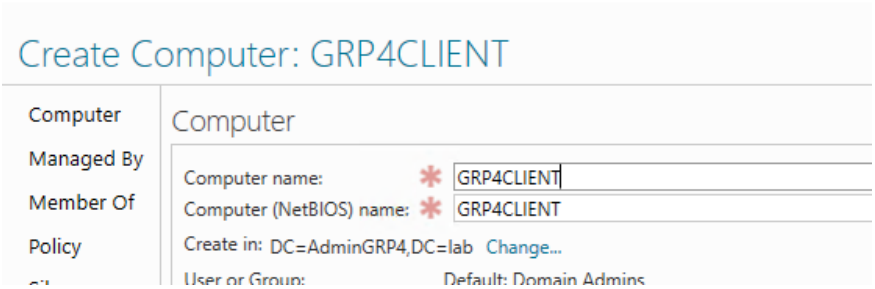

Figure 9: Create computer object

4.4 Joining a Windows PC to The Domain

1. At first, we set the IP address for the client to be automatically, and the DNS will be the IP of the domain controller as shown in figure 10.

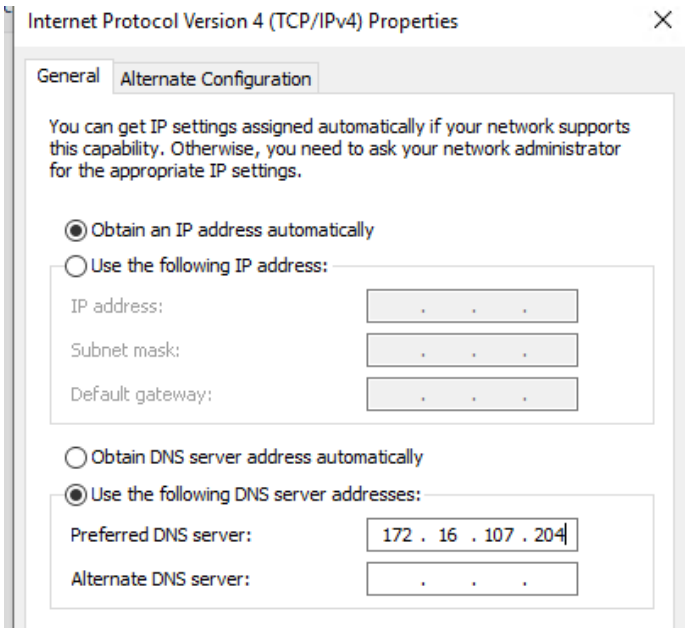

Figure 10: IP & DNS for Client

2. After that, we change the computer name and the domain name for the client to be the same domain of the domain controller. Next, we should enter the admin user and his password to be authenticated and authorized for that domain, as shown in figure 11. Then we restart the windows client.

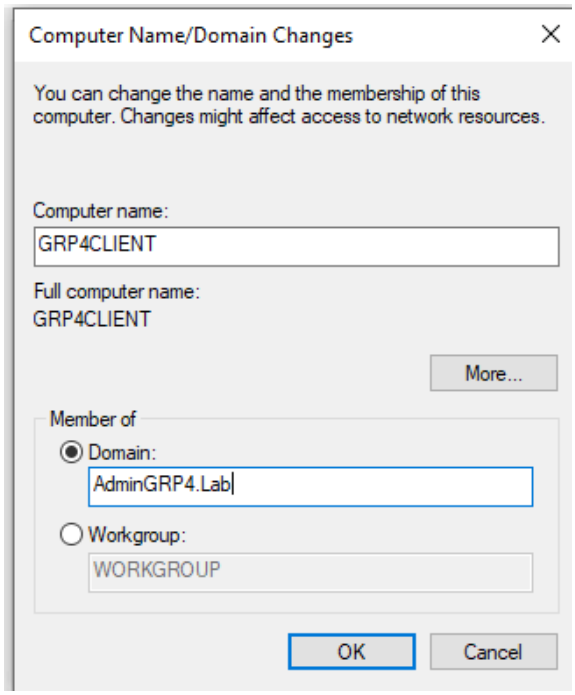

Figure 11: Change Computer name and domain name

3. Then, we try to login with the student domain account which, will most probably fail. So to rectify that, we need to add the student domain account to the remote desktop users since Hyper-V login sessions are remote desktop connections, as shown in figure 12. In the last, we try to login again as shown in figure 13 that we successfully logged in, and we verify that the group name as shown in figure 14.

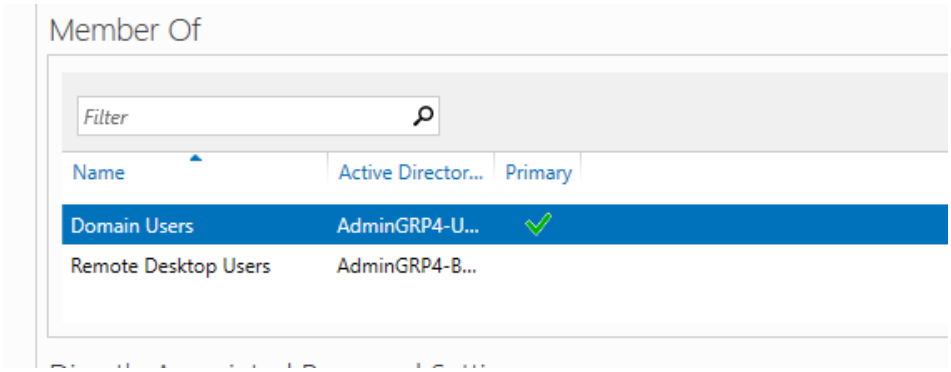

Figure 12: Add remote desktop to Student account

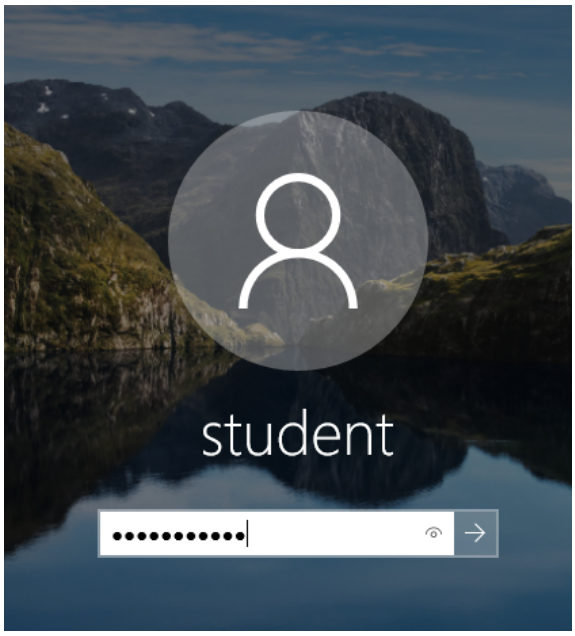

Figure 13: Login using student domain

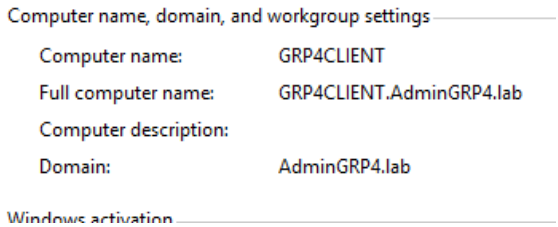

Figure 14: Verify domain(group)name

5 Conclusion

In summary, the Active directory domain service is a controller Domain that the administrator used to authenticate all users and computers in a Windows domain-based network. And enforces policies and rules for all computers related to the network domain.

6 References

https://en.wikipedia.org/wiki/Active$_{D}irectory$
https://www.itechtics.com/enable-hyper-v-windows-10-home/
https://en.wikipedia.org/wiki/Windows$_{S}erver$