Active Directory Lab

Full Documentation | 10-12-2023

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Purpose

Active Directory is used by approximately 90% of Global Fortune 1000 companies. It goes without saying that it is important to be at least familiar with Active Directory considering that I will likely have to use it, especially in the world of IT. The purpose of this project is to get familiar with the administrative side of Active Directory by creating a lab environment and managing the environment.

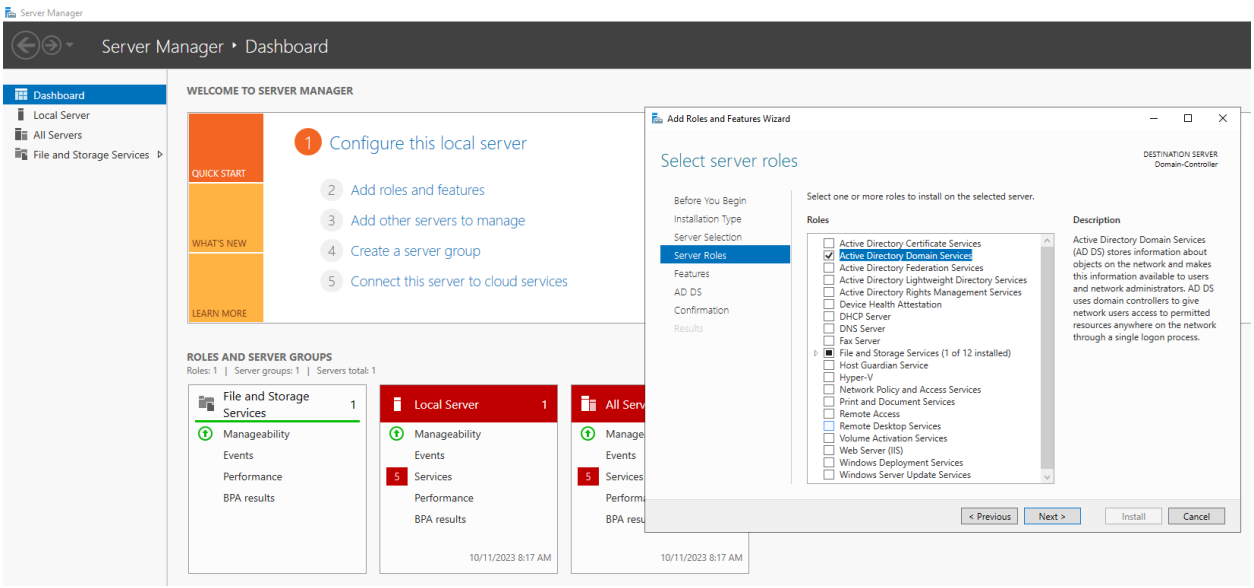
Scope

The scope of this project is to create an Active Directory lab environment as well as users and groups to manage. There will be a few objectives in order to achieve this which are:

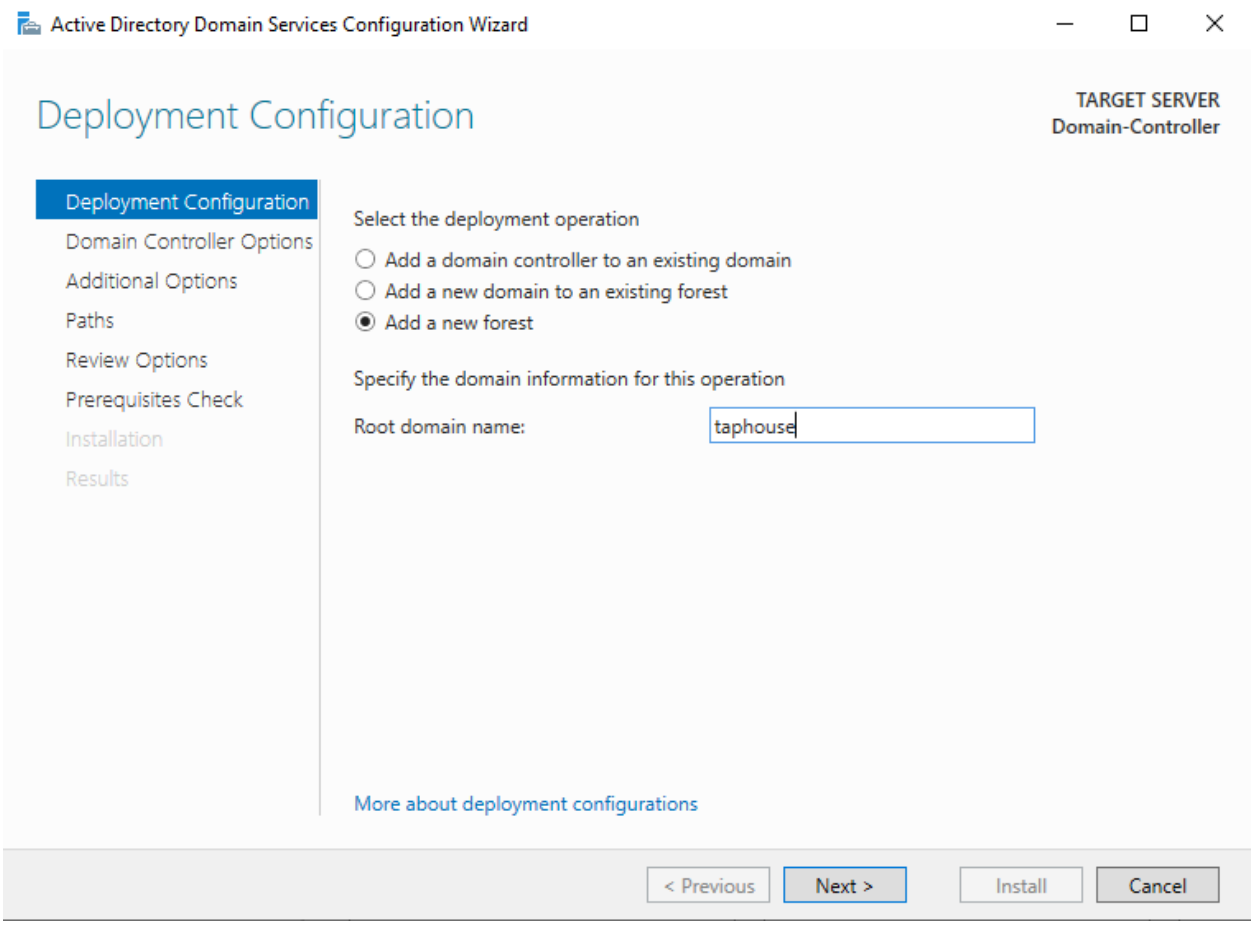
- Configure Windows Server 2019.
- Enable Active Directory.
- Configure DHCP and NICs on the Domain Controller.
- Create 1000 users with PowerShell.
- Configure client machine (separate VM).
- Reset a user's password.
- Create an Organizational Unit (OU).
- Create a Group Policy Object (GPO).

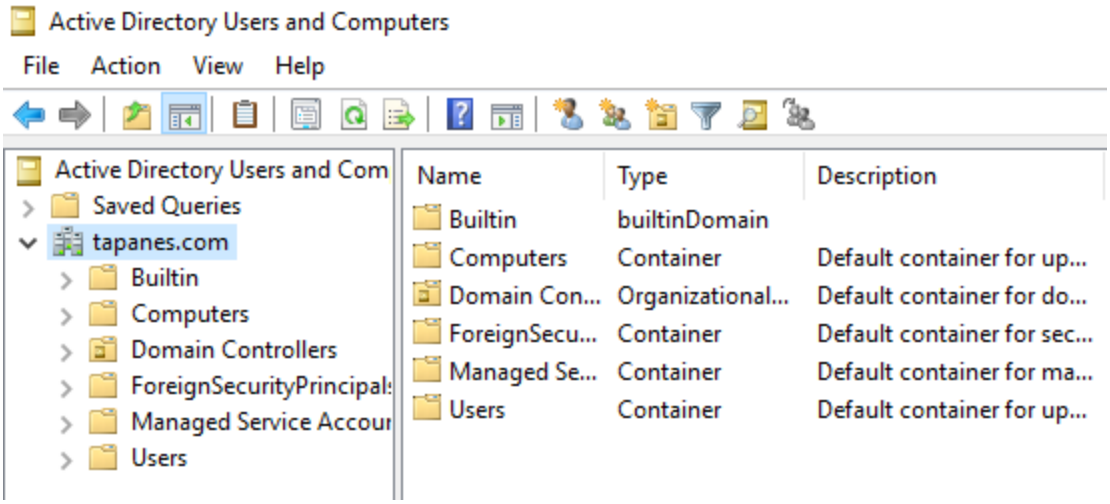
Project

The first step in this project is to configure Windows Server 2019. This OS will host the Domain Controller for my AD lab environment. Luckily, I already had Windows Server installed and ready to go on VirtualBox from my home server project. The only thing I had to do was set up the OS. After setting up the operating system on VirtualBox, the next step is to enable Active Directory through the server control panel. This can be seen in the screenshot below.

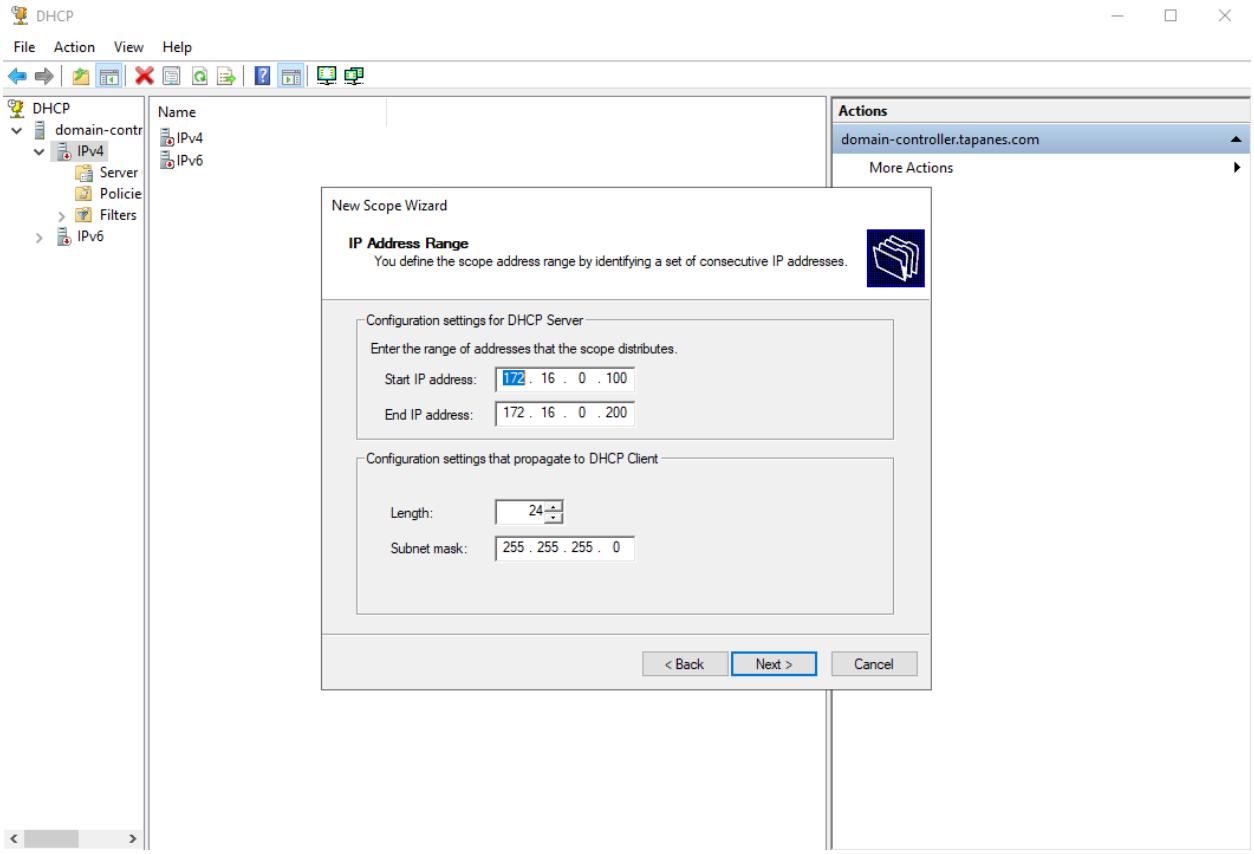


Now that Active Directory is enabled, the next step is to configure it by naming the Domain which is tapanes.com. This can be seen in the screenshots below.

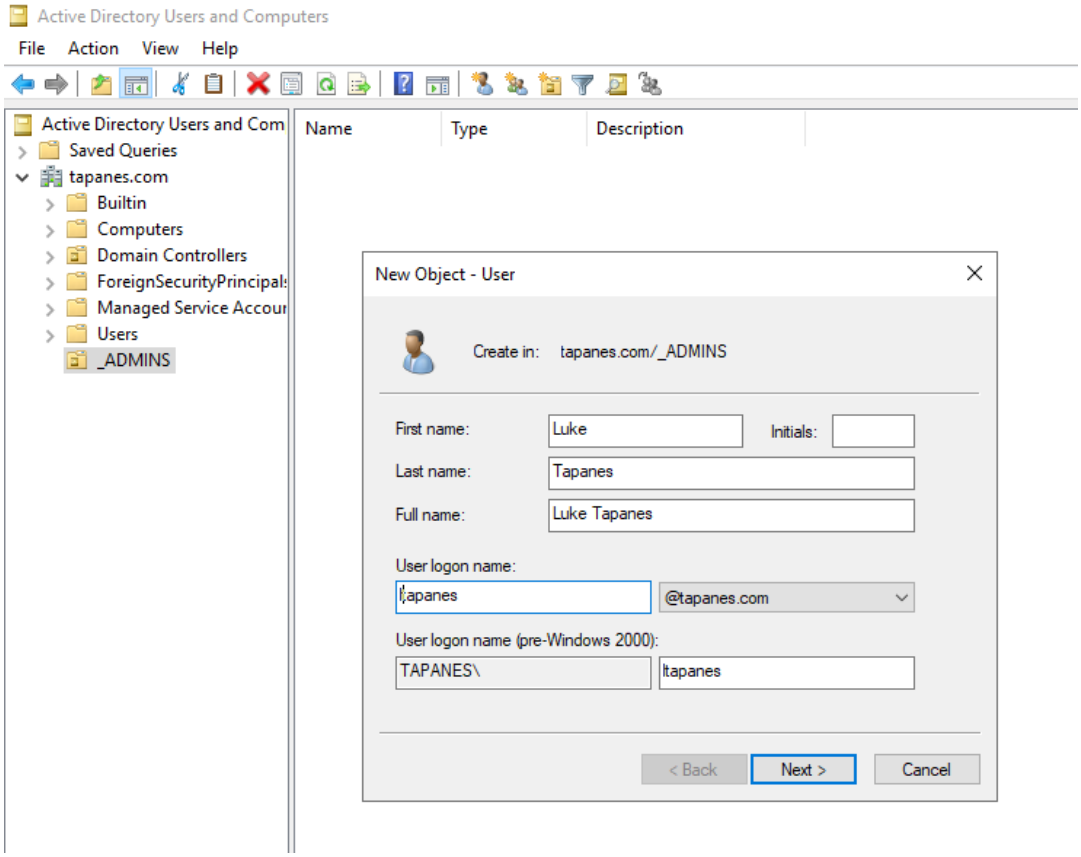




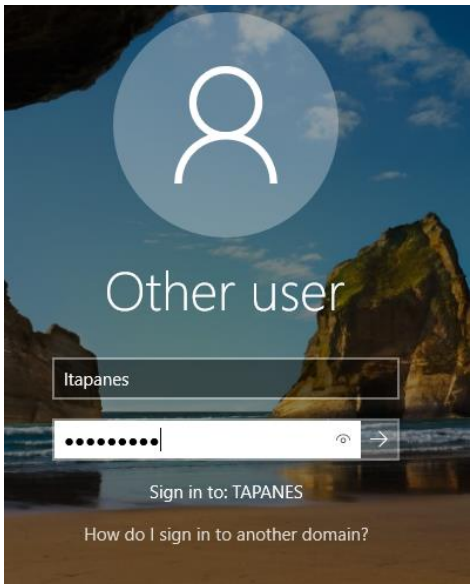
The next step is to configure DHCP. Because the domain controller functions as a server, it will need to automatically assign Ip addresses to client machines which is the purpose of configuring DHCP. It is also important to make sure that the domain controller has a static IP address. This can be seen ibn the screenshot below.



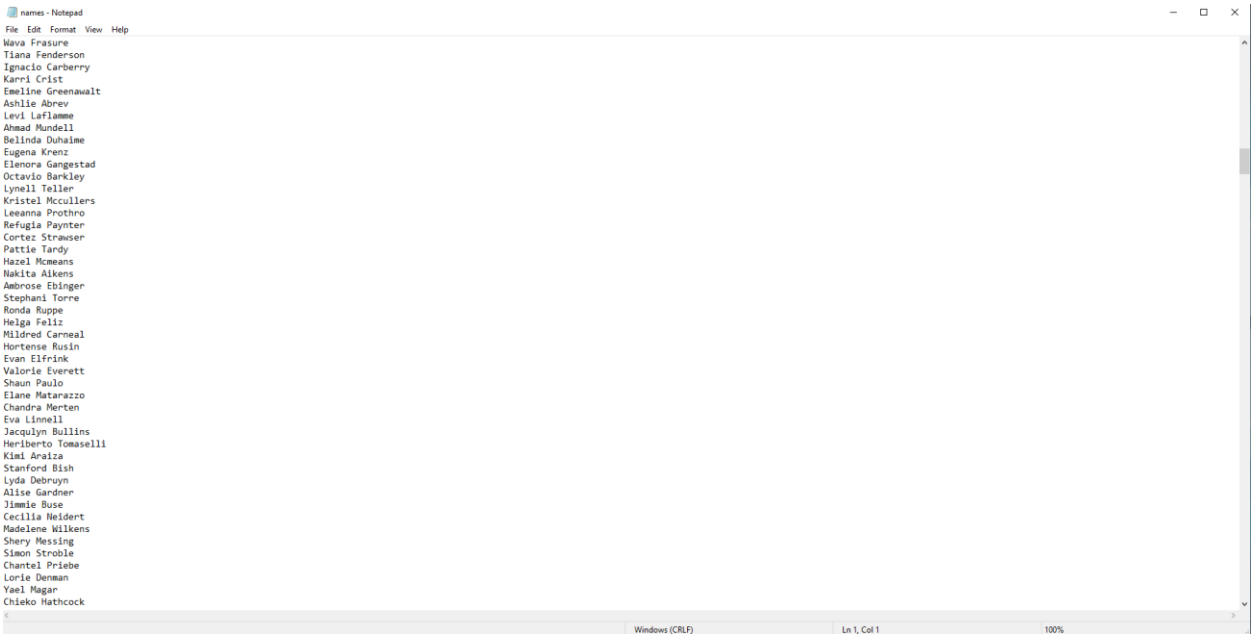
Now that the domain controller has been configured, I went ahead and created an admin account to manage the DC.

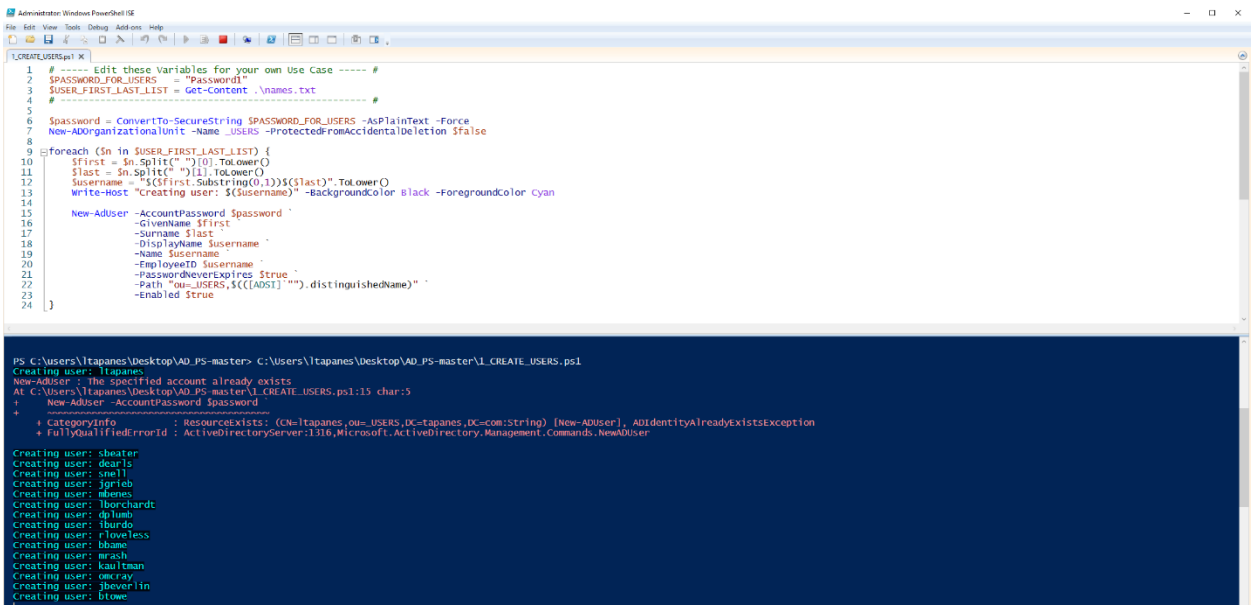


I then tested to see if the account creation worked by logging into it. Sure enough, it worked.

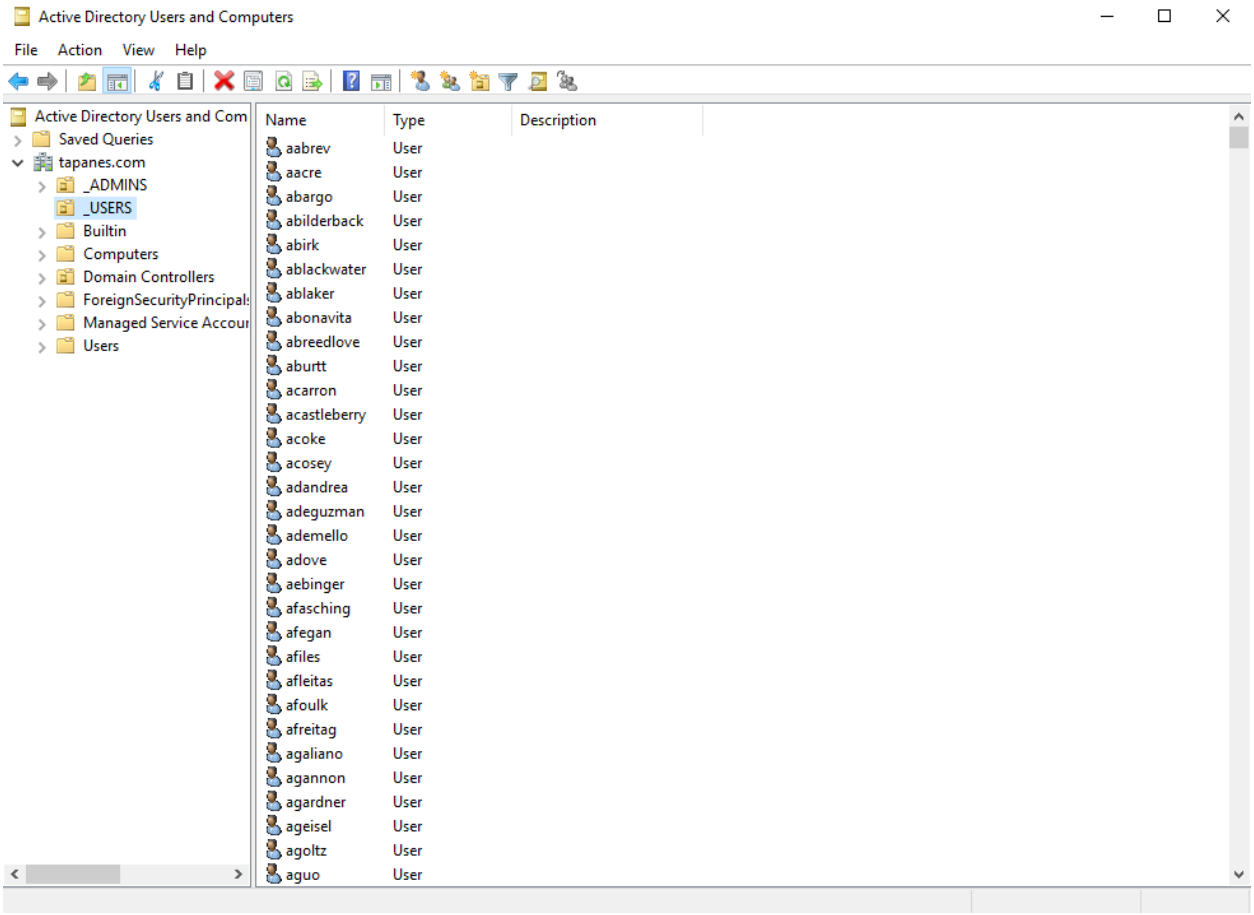


The next objective in this project is to create 1000 users to put on the domain controller. Manually creating this many accounts would be extremely painful, so I used PowerShell and a script to achieve this in minutes. I fed the script a wordlist filled with random names, and it created the accounts automatically. The script that I used was written by Josh Madakor, a Youtuber. This can be seen in the screenshots below.

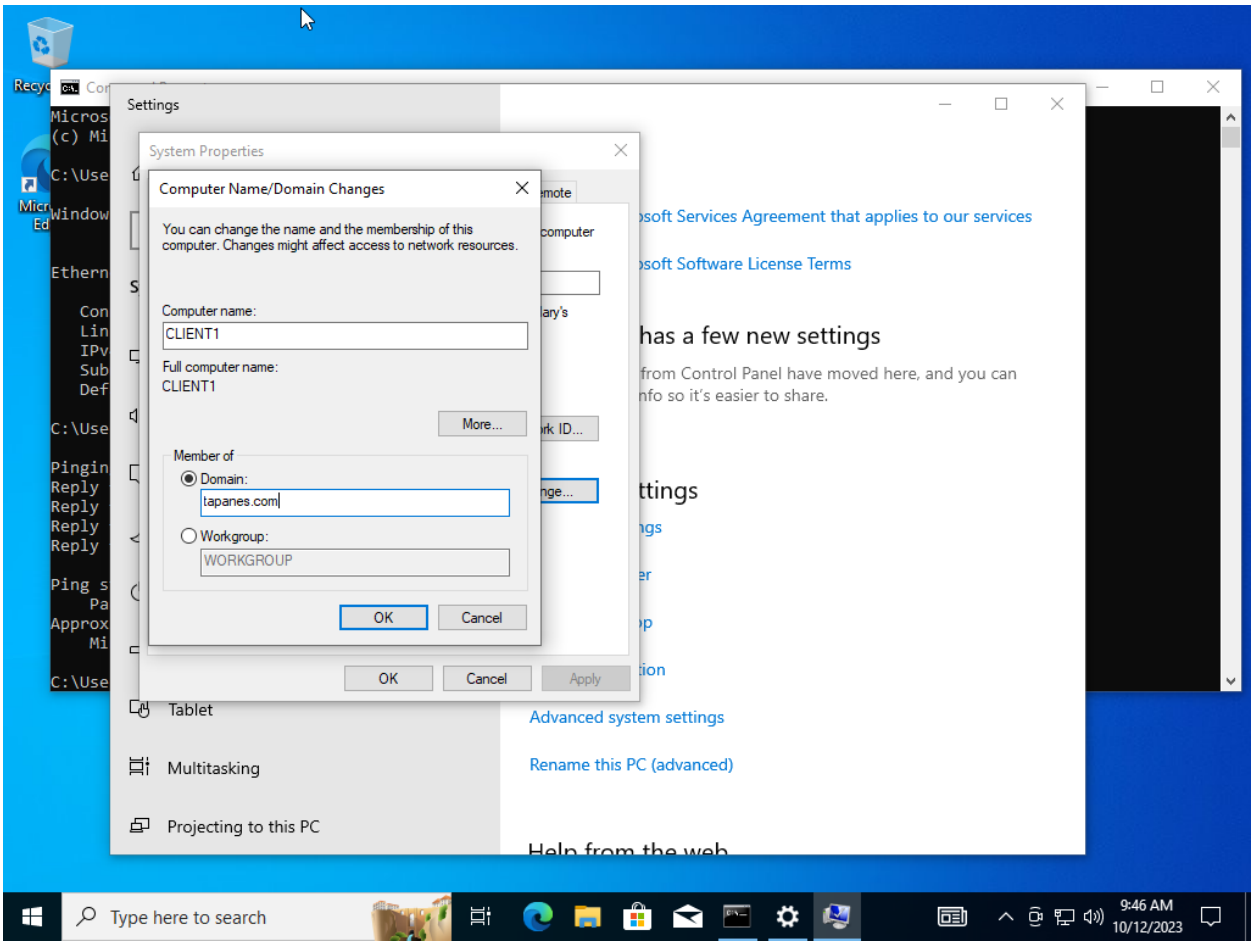




As seen in the screenshot below, the users were successfully added.



The next objective is to create a client machine in a separate virtual machine. To do this, I installed Windows 10 and configured it in VirtualBox. I booted up the VM and configured the network setting needed to connect to the AD domain. I named the machine CLIENT1. This can be seen in the screenshot below.

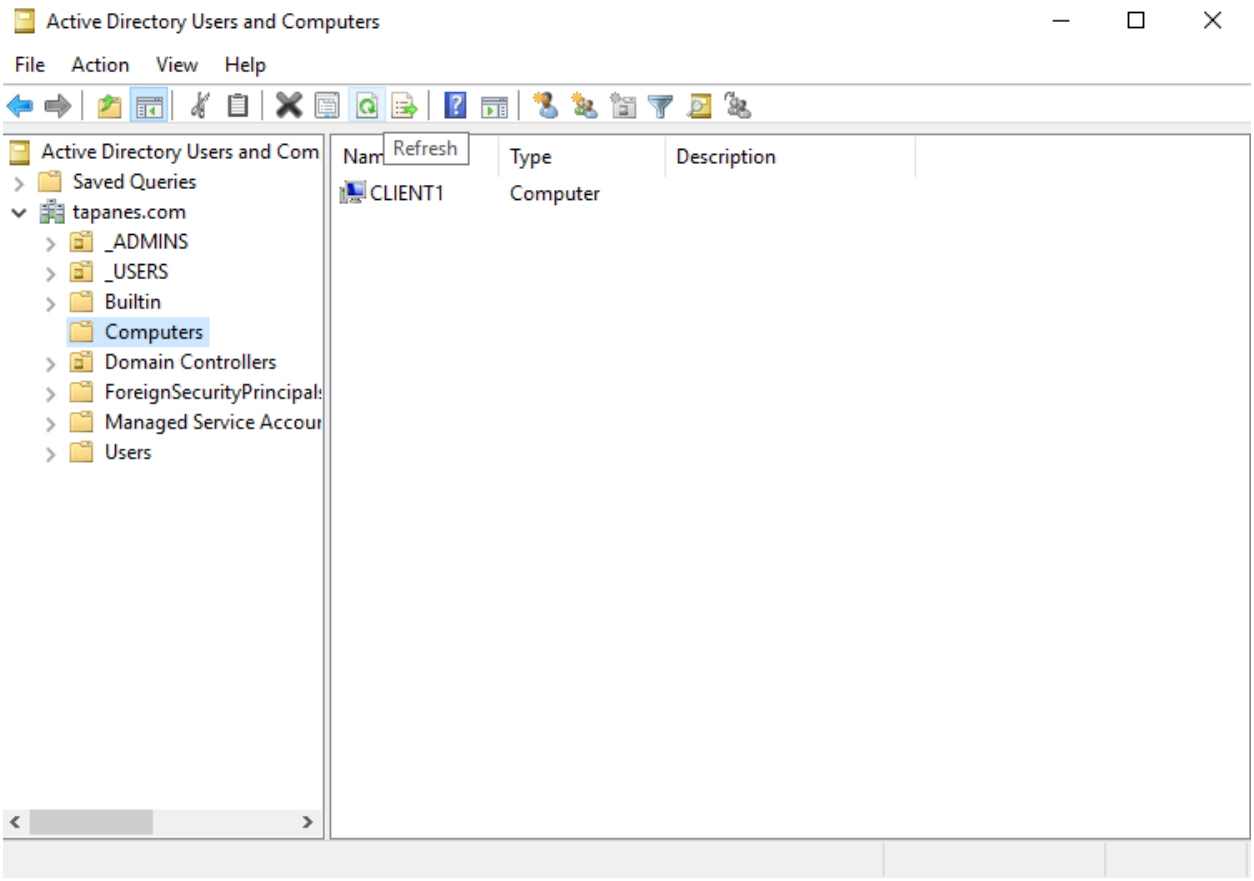


To make sure that the client machine had internet access, I pinged the domain controller and google.com.

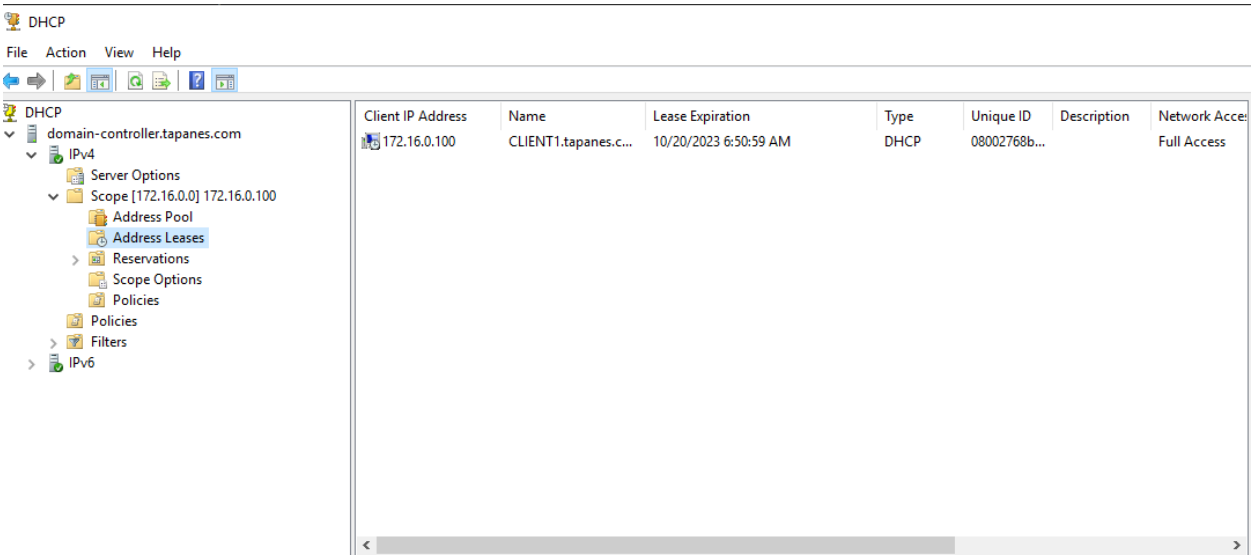
Command Prompt

```
Microsoft Windows [Version 10.0.19045.2965]
(c) Microsoft Corporation. All rights reserved.

C:\Users\user>ipconfig

Windows IP Configuration


Ethernet adapter Ethernet:

   Connection-specific DNS Suffix  . : tapanes.com
   Link-local IPv6 Address . . . . . : fe80::6751:9f79:4199:feec%2
   IPv4 Address. . . . . . . . . . . : 172.16.0.100
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : 172.16.0.1

C:\Users\user>
```

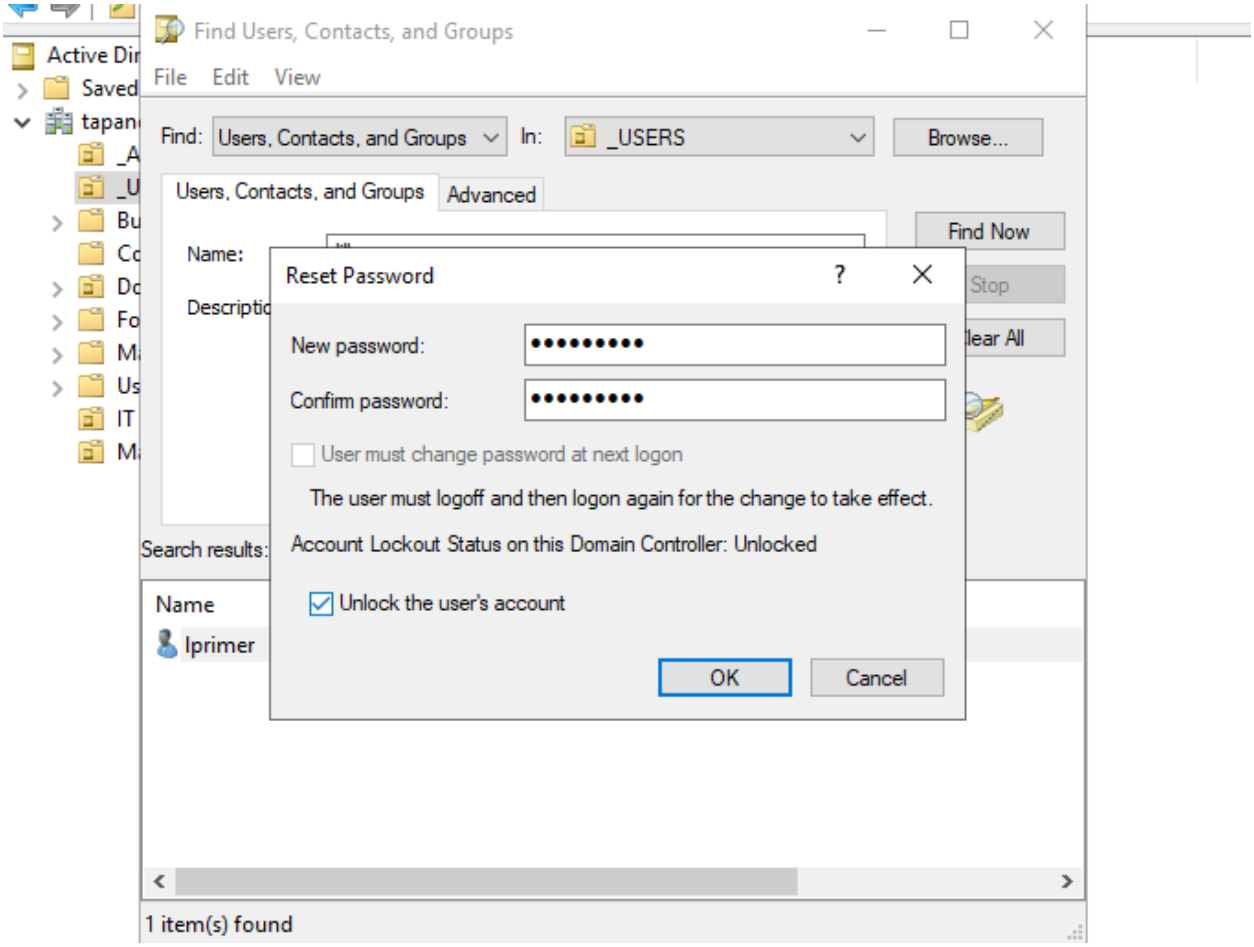
To make sure the client machine was connected to the domain, I checked the domain controller to see if the device was connected and it was.



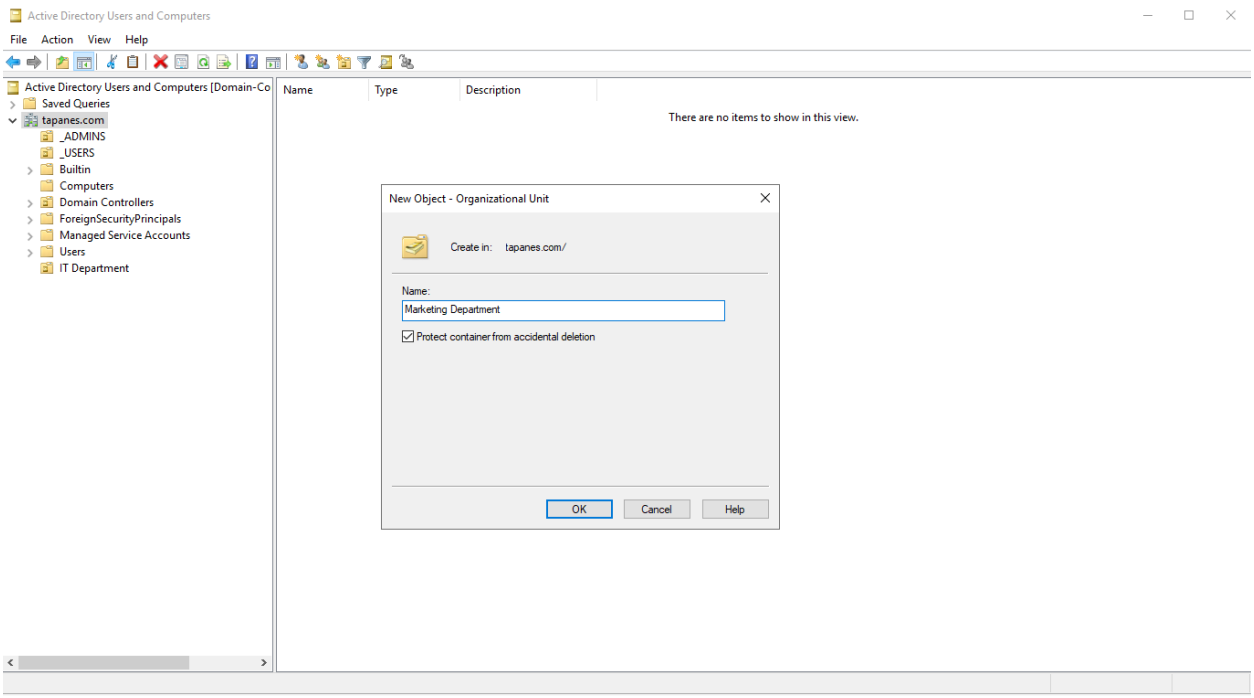
I also checked to see if the DHCP function was working properly by checking the leased IP addresses.



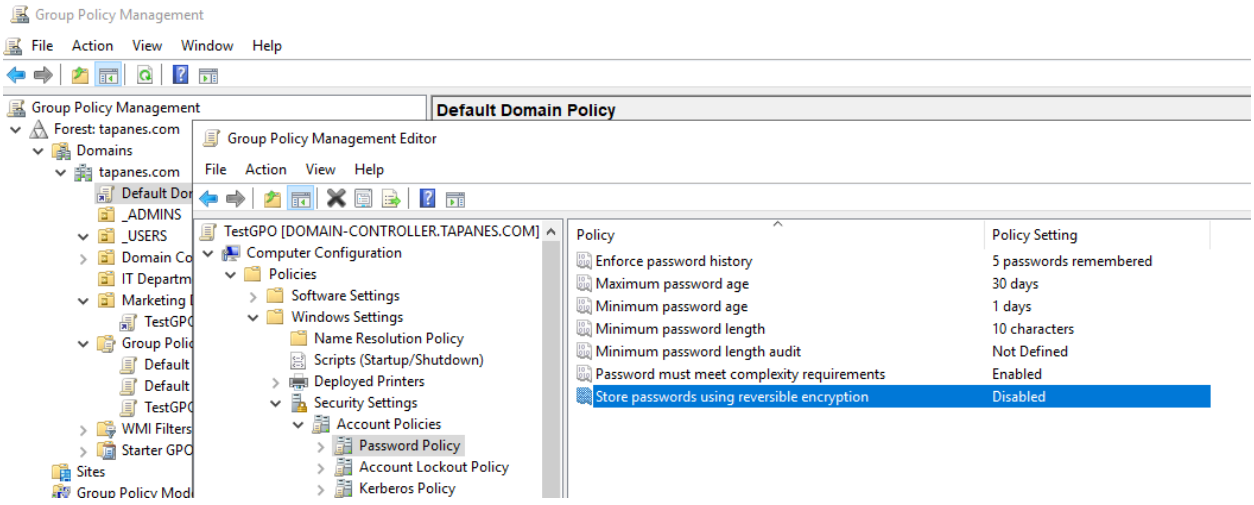
Now that the domain controller and a client machine have been configured, it is time to perform administrative actions to simulate a real-world environment. The first objective is to reset a user's password. This is one of the most common tasks a system administrator does on a regular basis. To do this, I navigate to "Users and Computers" and use the find feature to look up a user. From here, I select the user and click on "rest password" and then proceed to reset their password.



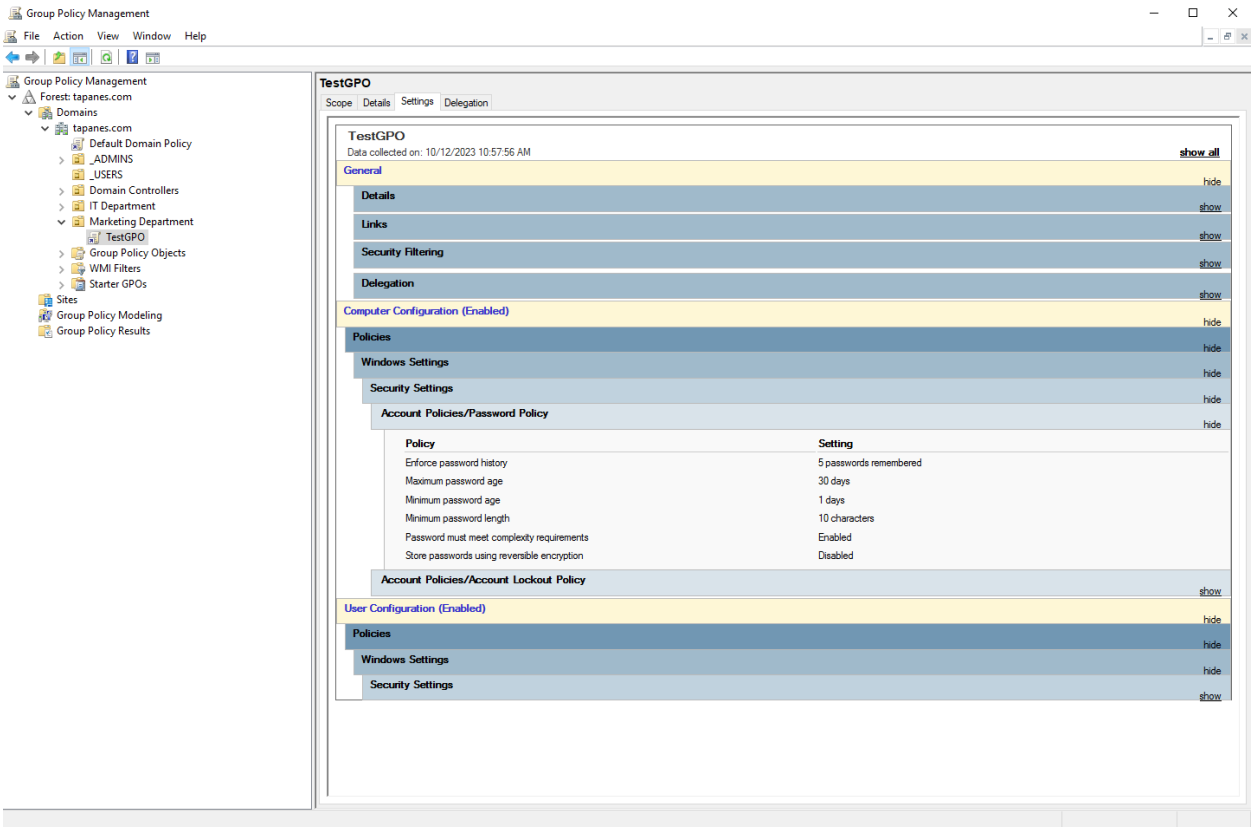
The next objective is to create an Organizational Unit (OU). This is relatively straightforward. I navigated to the domain, right clicked, and selected "new object." From here I created two OUs which are the IT and Marketing departments.



The final objective is to create a Group Policy Object. GPOs are very important because it allows an administrator to implement different controls for different groups accordingly. For this project, I am going to create a GPO that will be enforced for every user on the domain. The GPO will be a password policy that enforces password history, age, length, and complexity. To do this, I navigate to group policy management editor and navigate through a few tabs until I see password policy. This can be seen in the screenshot below.



To see if the policy was properly implemented, I verified by clicking on the GPO and the password policy details. This can be seen in the screenshot below.



Conclusion

This project greatly helped me understand Active Directory in more depth. I had a basic understanding of what AD was but not really how it worked or what was going on in the backend. This project gave me experience in configuring a domain from scratch and performing administrative duties in Active Directory. To recap, in this project, I successfully:

- Configured Windows Server 2019.
- Enabled Active Directory.
- Configured DHCP and NICs on the Domain Controller.
- Created 1000 users with PowerShell.
- Configured a client machine (separate VM).
- Reset a user's password.
- Created an Organizational Unit (OU).
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