

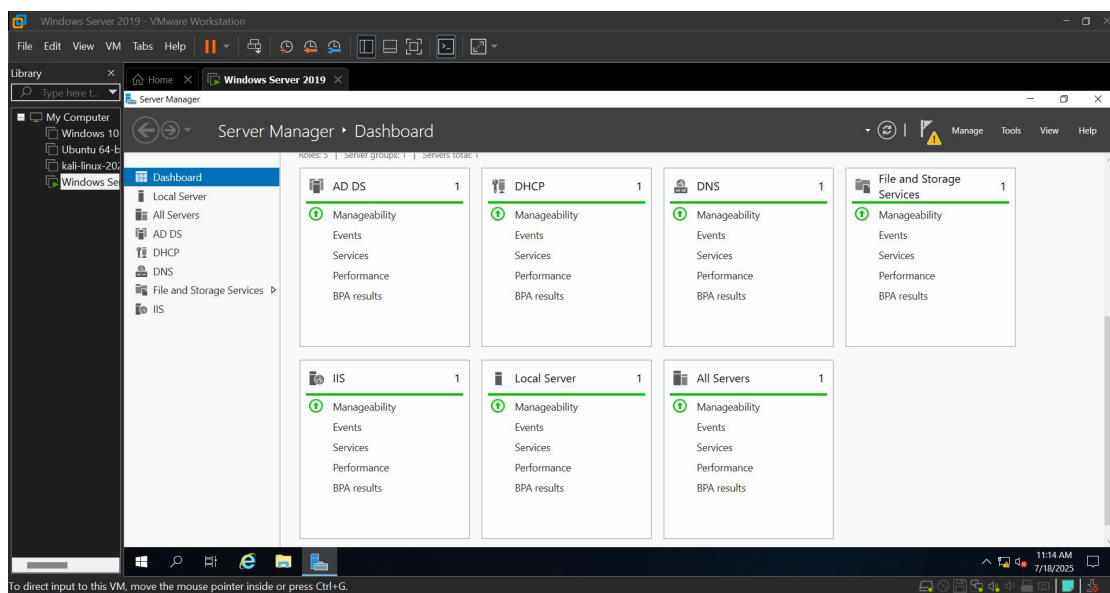
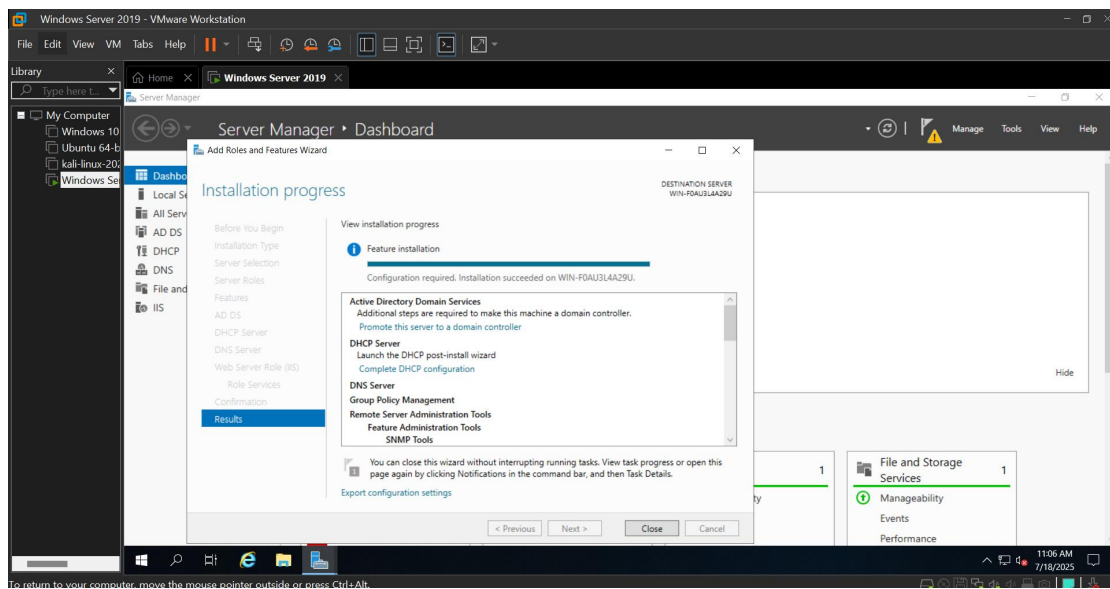
CYBERSECURITY PROJECT - SMITH GRACE

ACTIVE DIRECTORY

This project demonstrates the deployment and configuration of Active Directory Domain Services (AD DS) using Windows Server 2019 within a VMware virtualized environment. The setup includes DNS, Group Policy, and domain-joined client systems to simulate a functional enterprise network.

Steps:

1. I installed and configured the windows server 2019 on my virtual machine, set a static IP address then created some roles and features and installed them.



2. I created a domain, installed my windows client, configured DHCP for all possible clients and added my client to the domain.

PROPERTIES
For WIN-F0AU3L4A29U

Computer name	WIN-F0AU3L4A29U	Last installed updates	Never
Domain	smith.local	Windows Update	Download updates only, using Windows Update
		Last checked for updates	Never
Windows Defender Firewall	Domain: On	Windows Defender Antivirus	Real-Time Protection: On
Remote management	Enabled	Feedback & Diagnostics	Settings
Remote Desktop	Disabled	IE Enhanced Security Configuration	On
NIC Teaming	Disabled	Time zone	(UTC+01:00) West Central Africa
Ethernet0	192.168.186.120, IPv6 enabled	Product ID	Not activated
Operating system version	Microsoft Windows Server 2019 Datacenter	Processors	Intel(R) Core(TM) i7-8550U CPU @ 1.80GHz, Intel(R) Core(TM) i7-8550U CPU @ 1.80GHz
Hardware information	VMware, Inc. VMWare20,1	Installed memory (RAM)	2 GB
		Total disk space	59.68 GB

Windows Server 2019 - VMware Workstation

Server Manager > Local Server

DHCP console tree: win-f0au3l4a29u > IPv4 > Server

New Scope Wizard - Lease Duration

The lease duration specifies how long a client can use an IP address from this scope.

Lease durations should typically be equal to the average time the computer is connected to the same physical network. For mobile networks that consist mainly of portable computers or laptop clients, shorter lease durations can be useful. Likewise, for a stable network that consists mainly of desktop computers at fixed locations, longer lease durations are more appropriate.

Set the duration for scope leases when distributed by this server.

Limited to:

Days: 1 | Hour: 0 | Minute: 0

EVENTS

Server Name	ID	Severity	Source
WIN-F0AU3L4A29U	134	Warning	Microsoft-Windows-
WIN-F0AU3L4A29U	134	Warning	Microsoft-Windows-
WIN-F0AU3L4A29U	7023	Error	Microsoft-Windows-
WIN-F0AU3L4A29U	7023	Error	Microsoft-Windows-

Windows Server 2019 - VMware Workstation

Server Manager > Local Server

DHCP console tree: win-f0au3l4a29u > IPv4 > Server

New Scope Wizard - Domain Name and DNS Servers

The Domain Name System (DNS) maps and translates domain names used by clients on your network.

You can specify the parent domain you want the client computers on your network to use for DNS name resolution.

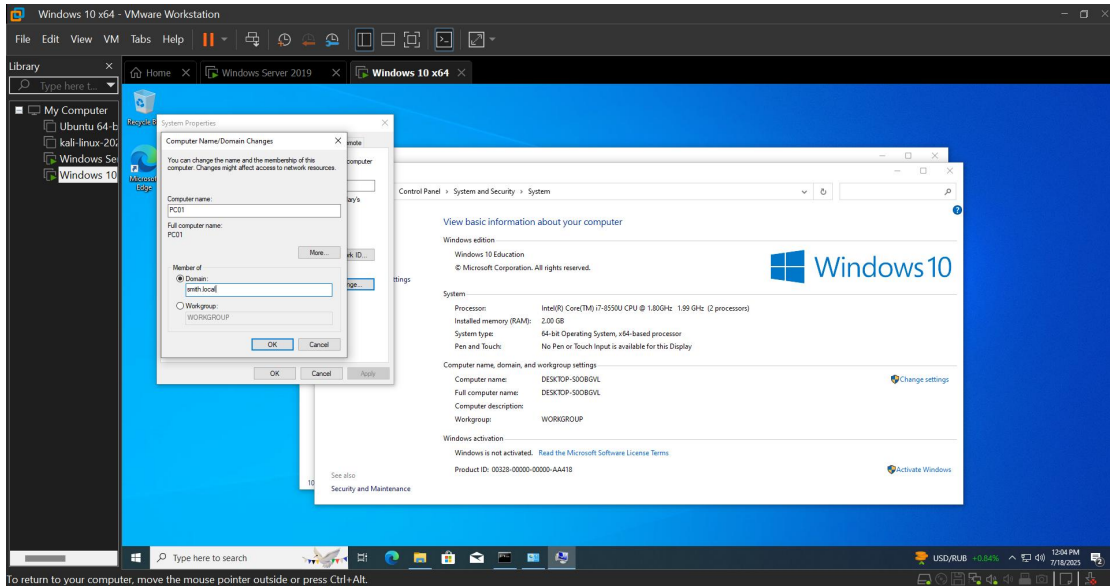
Parent domain: smith.local

To configure scope clients to use DNS servers on your network, enter the IP addresses for those servers.

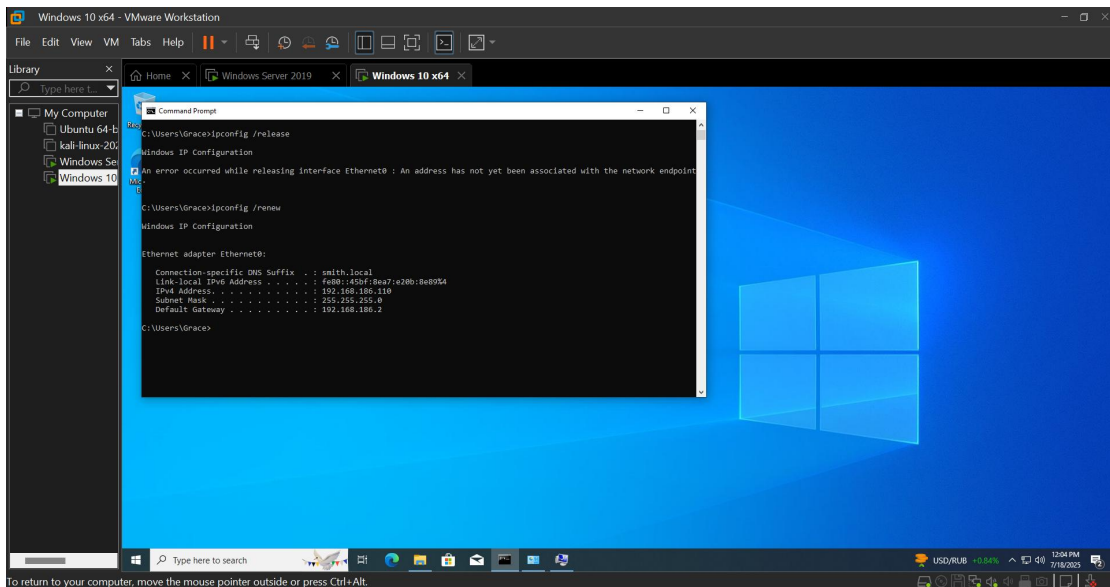
Server name: | IP address: 192.168.186.2

EVENTS

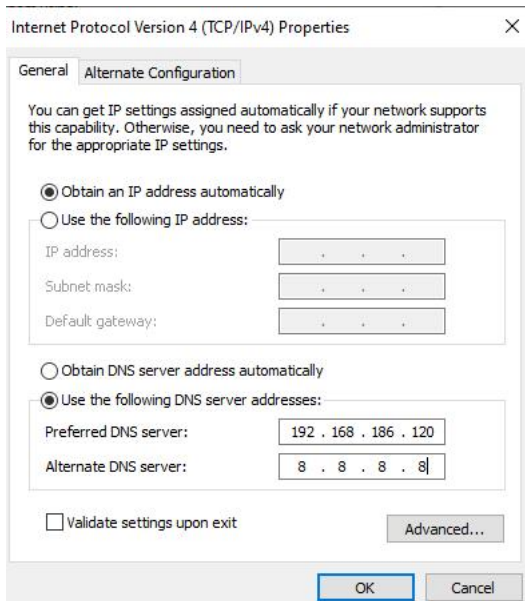
Server Name	ID	Severity	Source	Date and Time
WIN-F0AU3L4A29U	134	Warning	Microsoft-Windows-Time-Service	7/18/2025 6:21:11 PM
WIN-F0AU3L4A29U	134	Warning	Microsoft-Windows-Time-Service	7/18/2025 6:21:10 PM
WIN-F0AU3L4A29U	7023	Error	Microsoft-Windows-Service Control Manager	7/18/2025 6:21:08 PM
WIN-F0AU3L4A29U	7023	Error	Microsoft-Windows-Service Control Manager	7/18/2025 6:21:07 PM



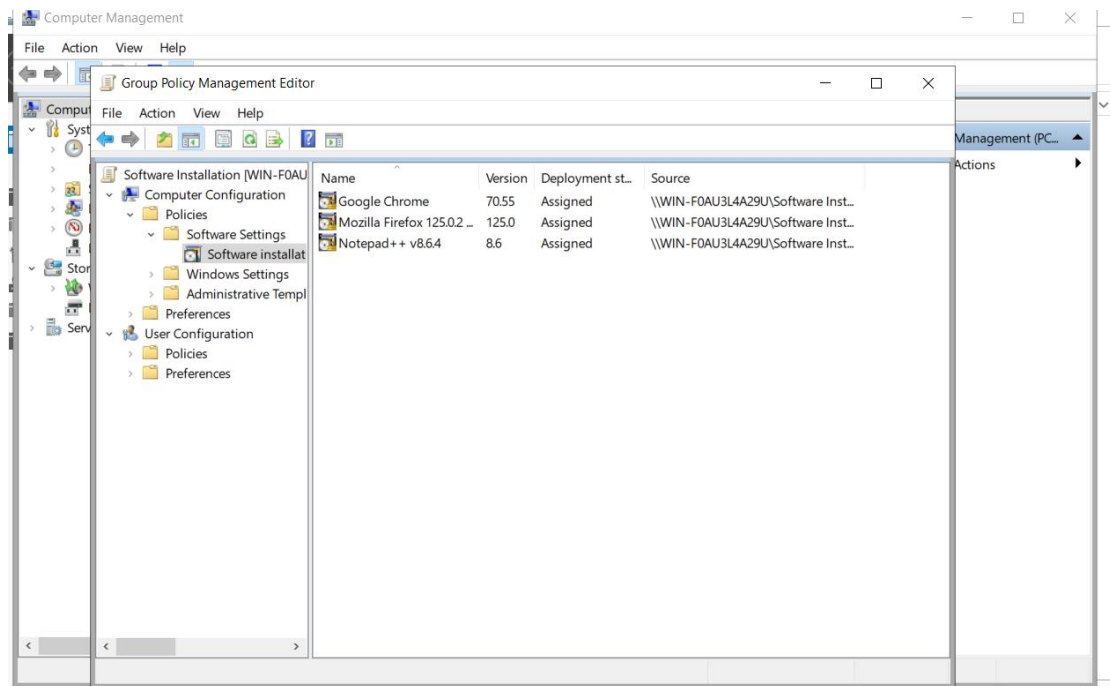
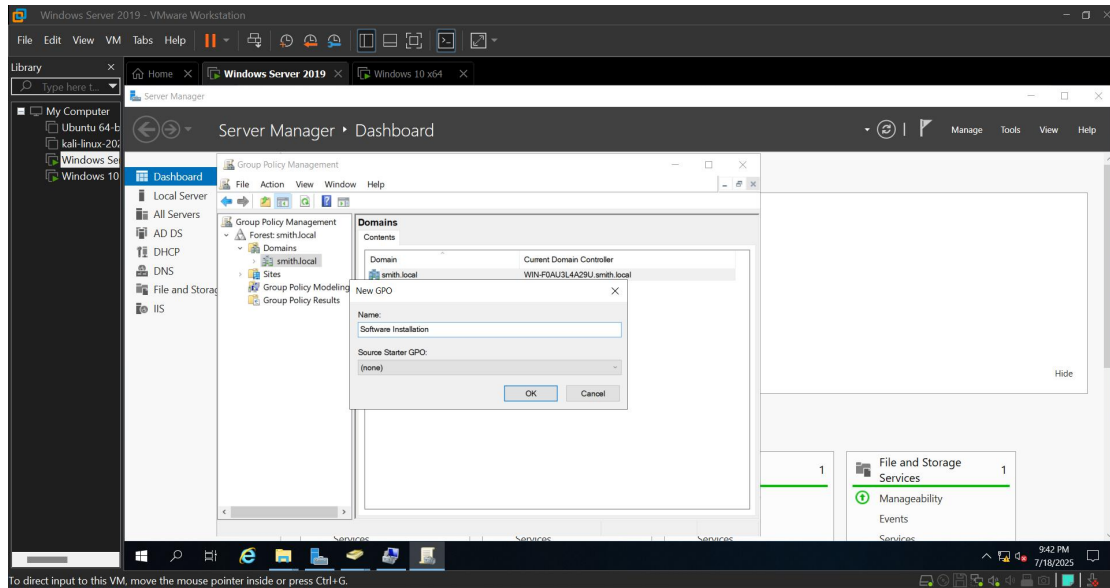
To return to your computer, move the mouse pointer outside or press Ctrl+Alt.

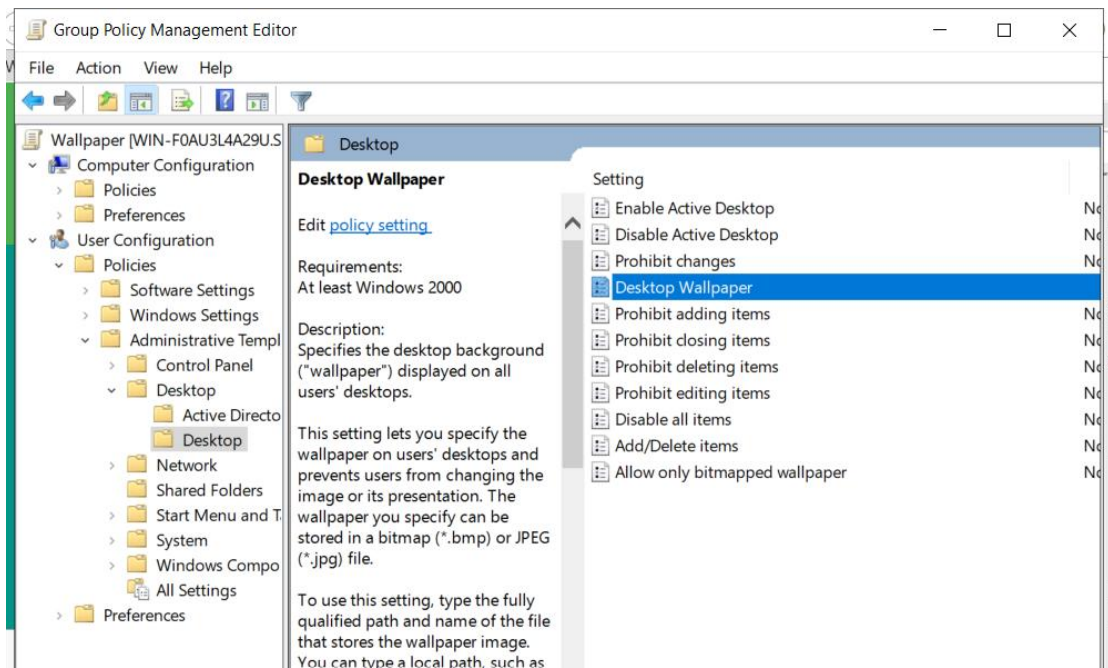
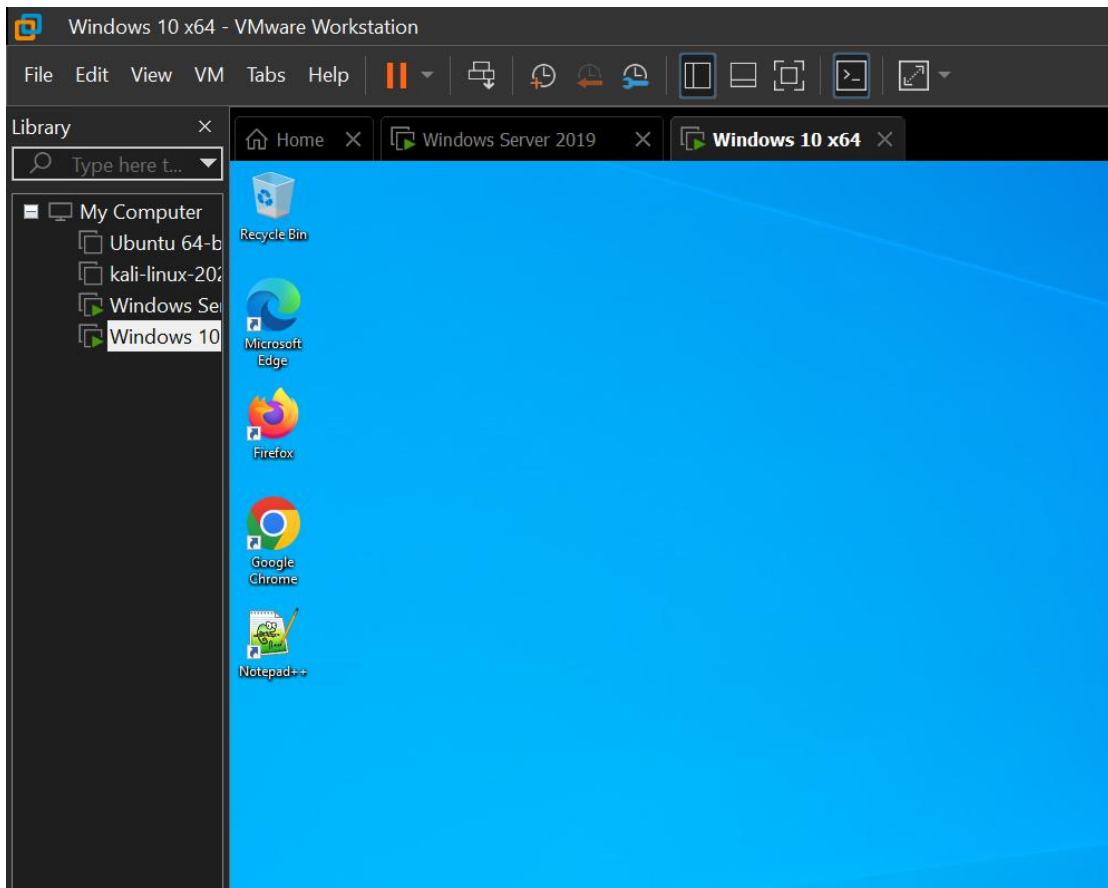


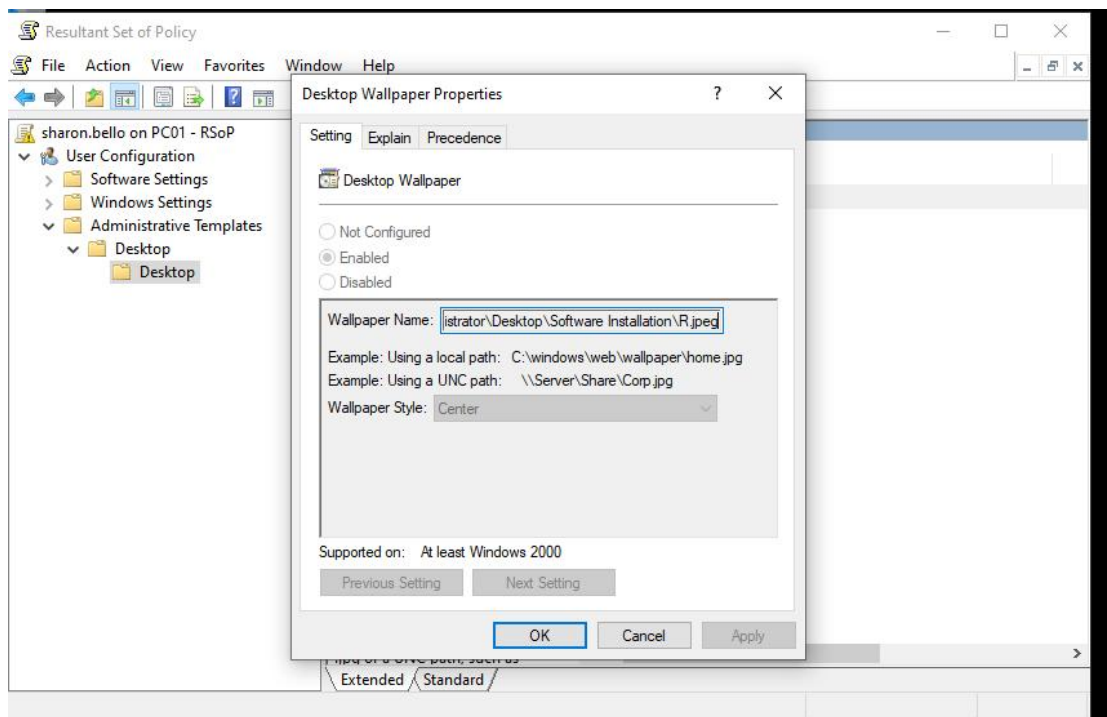
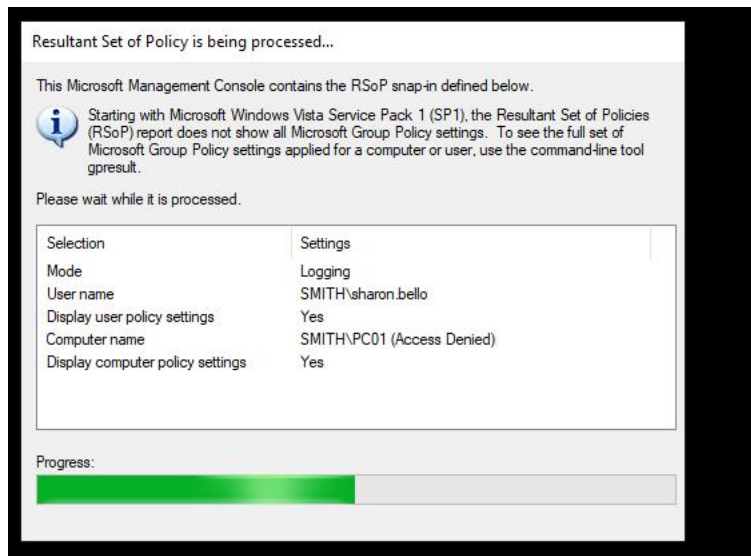
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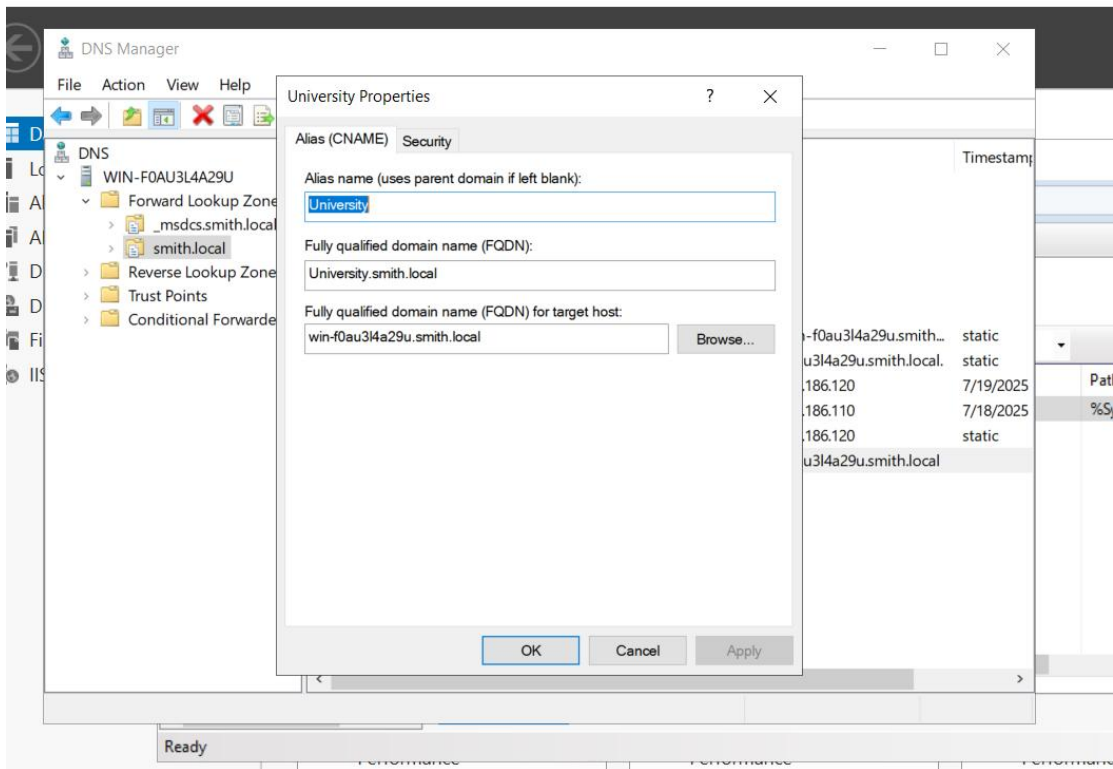
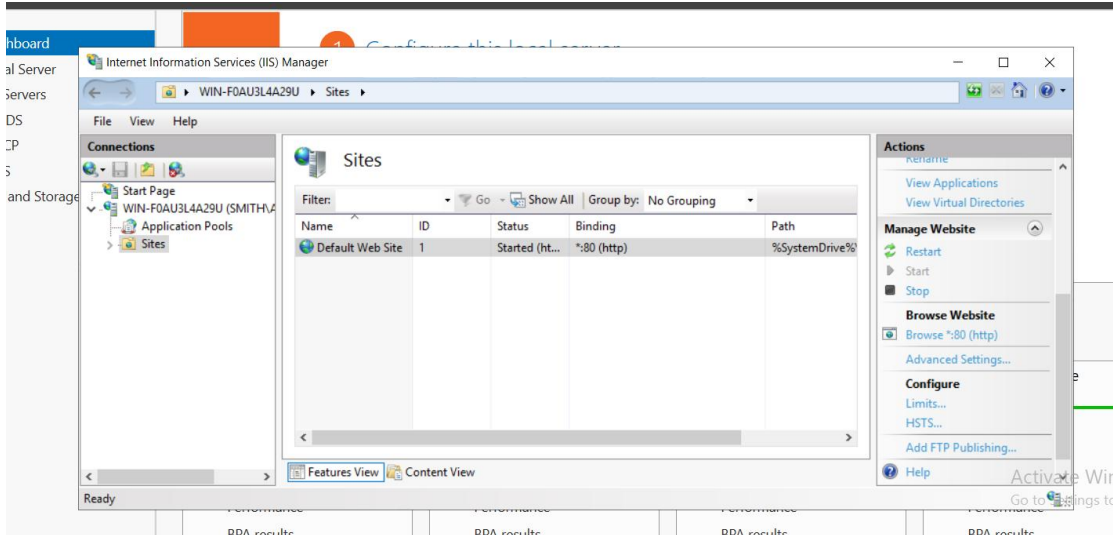
3. I created some users, configured two group policies(Software Installation and Wallpaper) and updated the client to that effect.

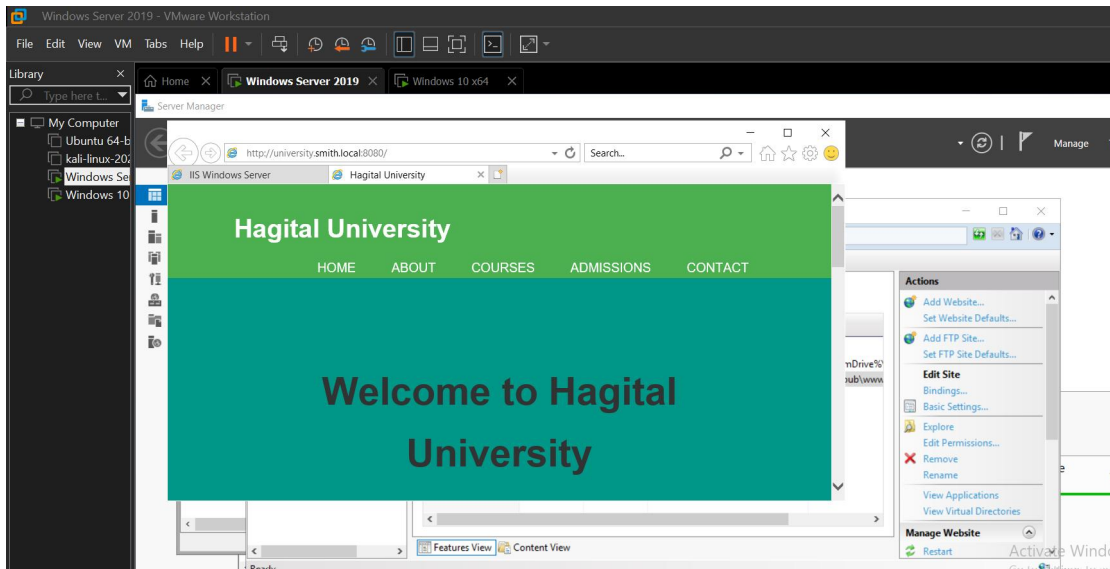
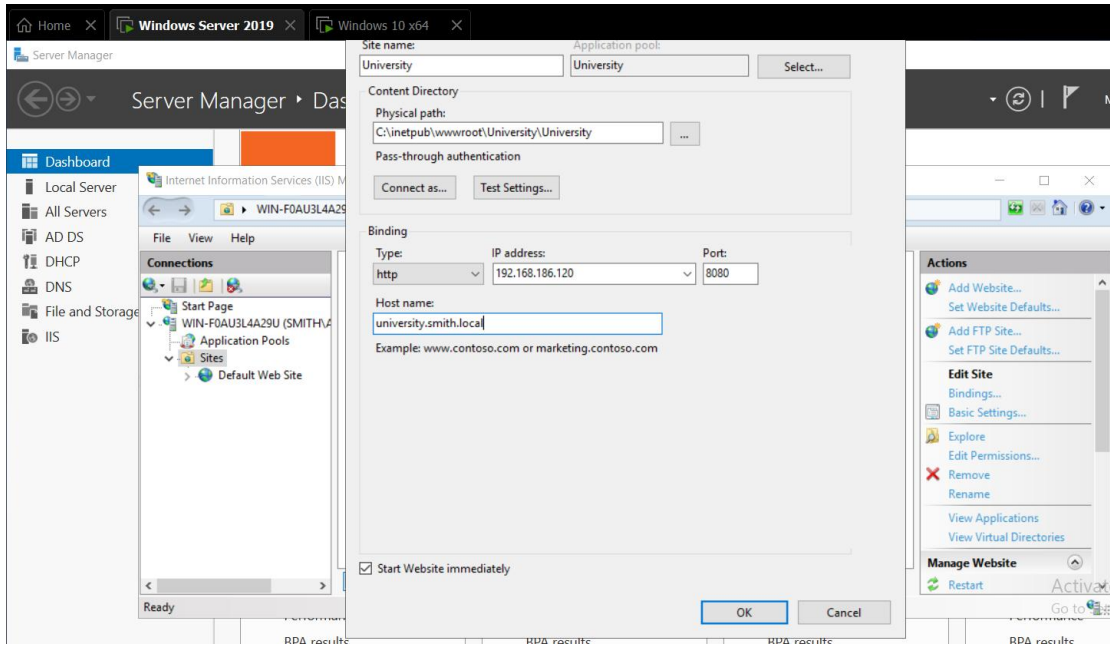


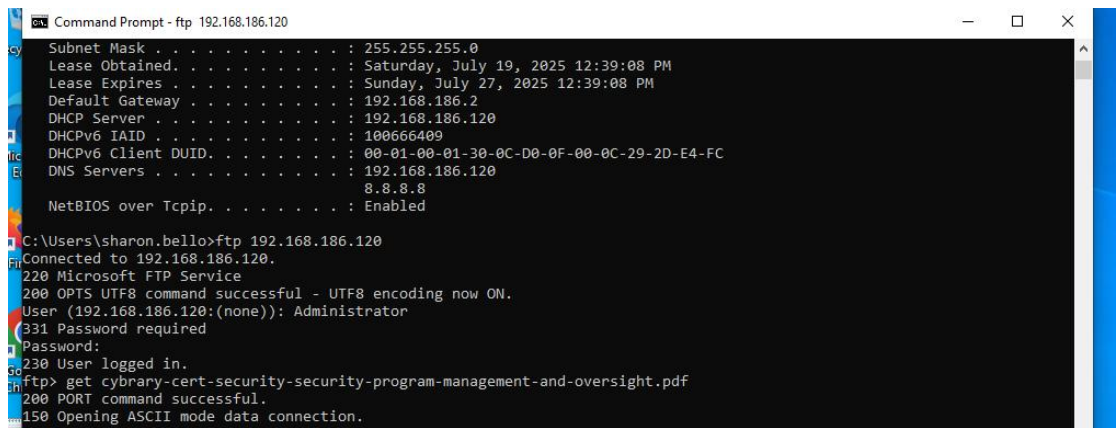
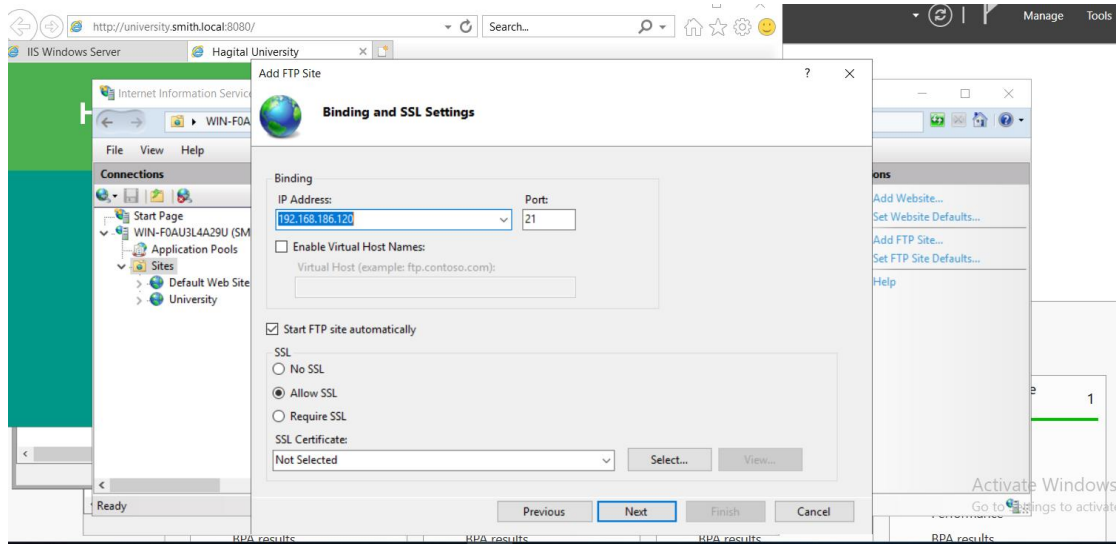




4. I created an Alias and deployed web and FTP servers.







Testing & Verification

- Login success from domain user accounts
- GPO applied correctly (e.g., wallpaper set, control panel disabled)
- DNS resolves smith.local from clients.

Challenges & Solutions

- GPO wallpaper not showing - Used UNC path and set permissions
- Clients not joining domains - Corrected DNS IP to point to server

Key Takeaways

1. Hands-on Deployment of Active Directory (AD DS)

- Successfully installed and configured AD Domain Services on Windows Server 2019 within a virtualized environment using VMware Workstation.

2. DNS Server Configuration for Domain Resolution

- Implemented and tested DNS services to ensure proper name resolution and domain controller accessibility across the network.

3. Client-Server Integration in a Domain Environment

- Joined multiple Windows 10 client machines to the AD domain (`smith.local`) and verified domain login functionality.

4. Organizational Unit (OU) and User Management

- Created logical OU structures (e.g., IT, HR, Students) and managed domain user accounts, groups, and permissions efficiently.

5. Group Policy Implementation (GPO)

- Designed and applied GPOs to enforce policies such as desktop wallpaper, control panel restriction, and drive mapping for specific OUs.

6. Network Services Testing and Troubleshooting

- Diagnosed issues related to DNS, domain joins, and GPO application

7. Virtual Lab Simulation of a Real-World Enterprise Network

- Simulated an enterprise IT infrastructure using a fully virtualized lab, showcasing practical knowledge of AD, networking, and system administration.

8. Improved Problem-Solving and Systems Thinking

- Overcame configuration challenges (e.g., GPO wallpaper blank screen, client DNS misconfiguration) through troubleshooting and testing.