Lab Number: 2. Network services and admin tools

Student name: Raine

Section Summary	Section 2: Network services and admin tools
	Goals
	• Configure the following network services on both WS 1:
	  ○ Domain Controller
	  ○ Dynamic Host Configuration Protocol (DHCP)
	  ○ Domain Name System (DNS) – primary
	• Configure the following on WS2:
	  ○ Domain controller with a child domain of WS1
	  ○ DNS secondary
	  ○ Windows Internet Name Service (WINS)
	  ○ Webserver: Internet information services (IIS) with a customized webpage for your organization linked to your domain name
	• Configure a one-way trust from WS1 to WS2 domain
	• Join windows client machine VM to the domain
	Implementation steps
	1. Use Server Manager to add AD DS role to WS1
	  • Log in as the local Administrator user and ensure the password is set to Router01
	  • Make sure your IP address is manually configured and can ping all nodes
	  • Install Active directory domain services (AD DS) role
	  • Create a unique domain name in a new forest: yourdomainname.com
	  • Use the default functional groups. What is the value and purpose of this?
	  • What happens to your local user accounts when your make your server a domain controller?
	2. Use Server Manager to add the DHCP role on WS1
	  • Use DHCP manager to configure the following IP address parameters that will be dynamically provided to network clients:
	  ○ Pool range: IPv4 addresses defined by addressing scheme in section 1
	  ○ Exclude the manually IP address of WS1 and WS2 from your pool. Why?
	  ○ SNM: defined by IP addressing scheme
	  ○ Default router: WS1 IP address
	  ○ Domain name: your_domain.com

- DNS server: WS1 IP address
- Alternate DNS server WS2 IP address
- WINS server WS2 Ip address

- Verify clients are automatically learning the dynamic IP address configurations using the client's command prompt and DHCP manager

3. Use Server Manager to add the DNS role on WS1
   - Use DNS manager in server manager tools to see the IPv4 Forward lookup zone:
     - This should be automatically configured when you install the role
     - What are the default entries?
     - Primary zone (WS1) to all DNS servers in forest
     - Zone name: yourdomainname.com
     - Do not allow dynamic updates
   - Use DNS manager to create new:
     - IPv4 Reverse Lookup zone
     - Create new DNS records: Host A (www) and PTR records linked to your WS1 IP address
     - Use the nslookup command prompt tool to verify the above DNS configurations

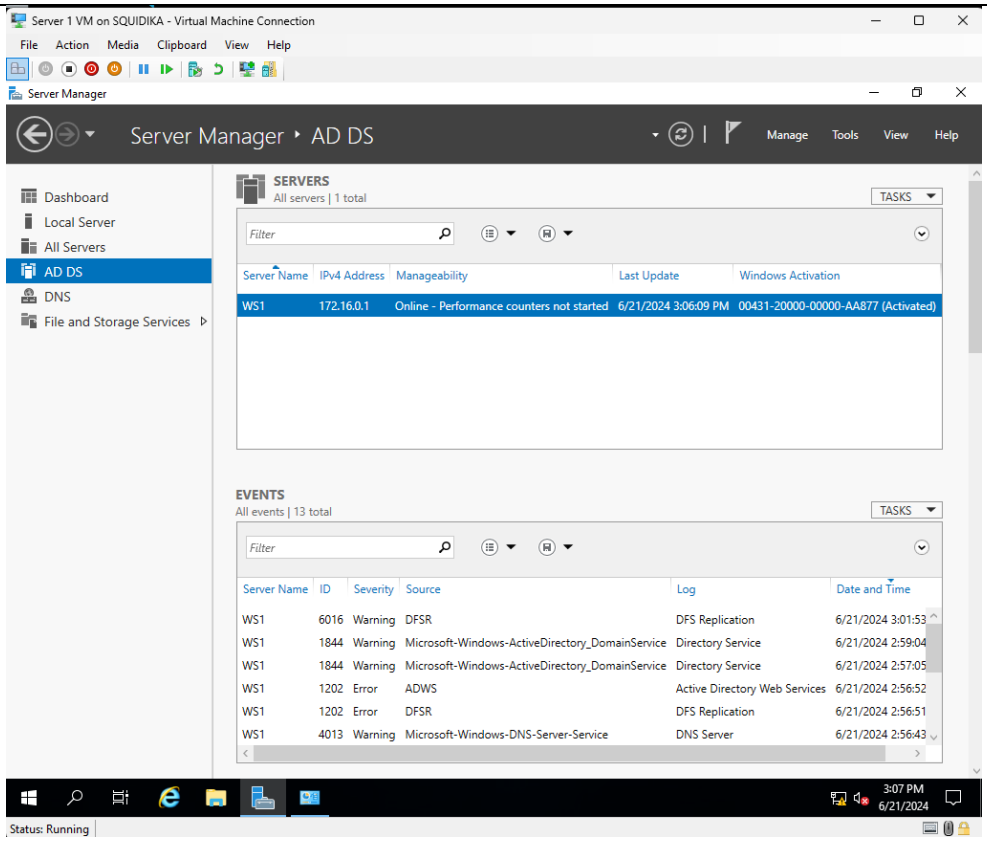
4. Add the Windows client to the domain on WS1. Remember to turn off the firewall and check that it is learning the DHCP address before joining the domain

5. Make WS2 a domain controller as well - with a unique child domain names
   - Install Active directory domain services (AD DS) role
   - The domain on WS2 will be a child of WS1 e.g child.yourdomain.com.
     - Child domain will be in the existing forest and site.
     - Will need to be authenticated by parent domain using the administrator domain and password
     - DNS delegation
     - NetBios name: YOURDOMAIN
     - (Create DNS conditional forwarders for each domain controller point to the parent domain and WS1 using the DNS manager)
     - Ensure firewall settings are disabled

6. Install DNS role on WS2 as you did with DS1 and add it as a second name server on WS1

7. Configure a one-way trust with from the Parent to the child domain using the Active directory domains and trusts tool and the following properties:
   - External trust (non-transitive)
   - One way outgoing
   - This domain only

	• Selective authentication • Trust password: Router01 • What is the default trust relationship between and parent and child trust? 8. If resources are available: Join a separate windows 10 client machine VM to the Child domain and verify all rights and configurations are correct. 9. Use Server Manager to add the WINS role on WS2 • Add the WS1 IP address to the manual IPv4 properties settings (Advanced->WINS tab) • Use the WINS tool to display the current active registrations 10. Use Server Manager to add the IIS role on WS2 • Create an customized index.html file and store it in the webservers root directory • Use IIS manager->default website • Remove iistart.html file and add your index.html file in the 'Default documents' section • Access webpage from your client's web-browser
1	



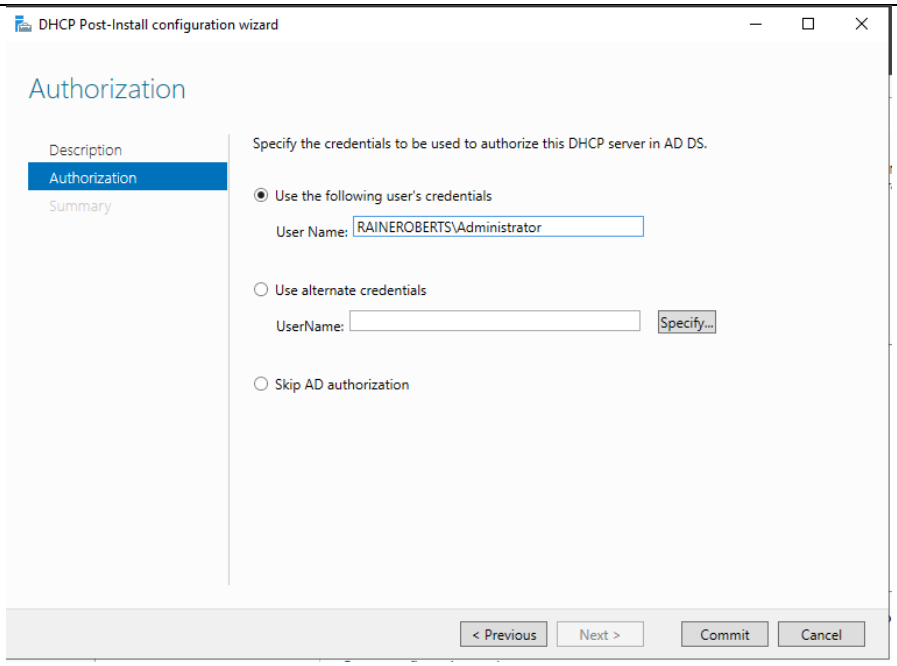
AD DS added to server through server and roles.

Explanation of Functional Levels

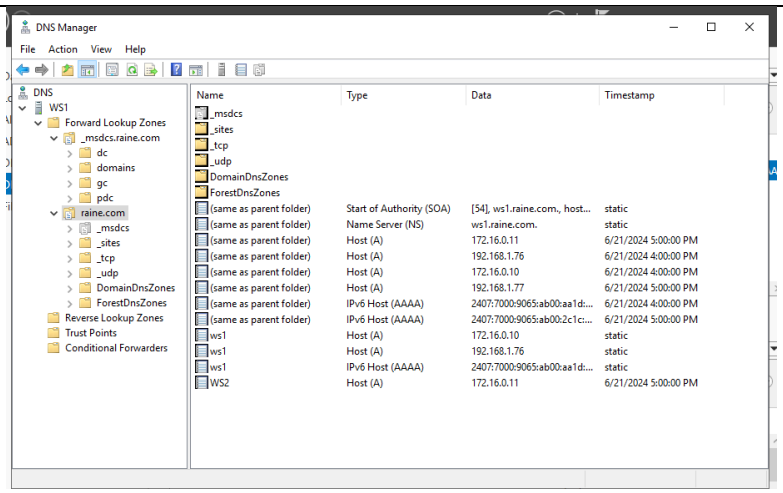
- **Functional Levels**: These are settings that determine the available Active Directory features based on the Windows Server versions used in the domain or forest.
    - **Purpose**: To ensure compatibility and enable new AD features. Higher functional levels enable more features but require all domain controllers to run the same or higher versions of Windows Server.
    - **Default Values**: Typically, the wizard will set the functional level to match the version of Windows Server you are using. For Windows Server 2019, it would likely set the domain and forest functional levels to Windows Server 2016.

Local User Accounts When Server Becomes a Domain Controller

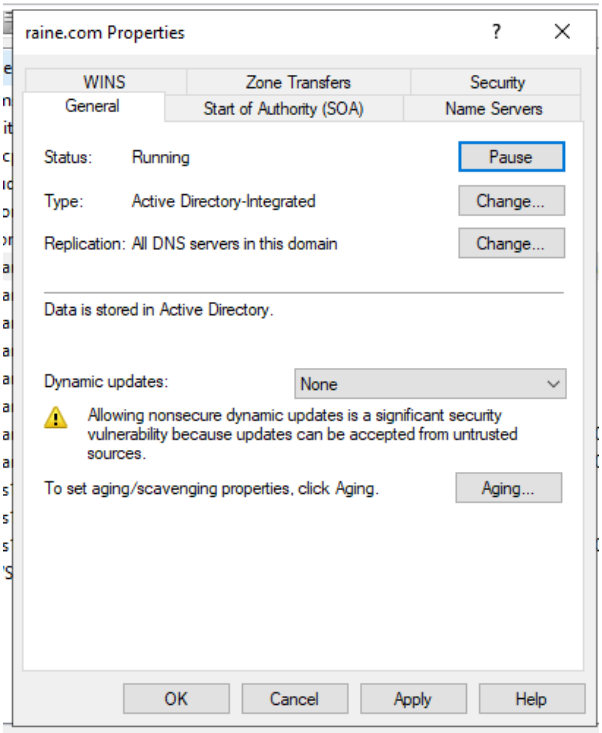
- **What Happens to Local User Accounts**:
    - When you promote a server to a domain controller, the local user accounts are removed, and the server no longer functions as a standalone system.
    - You will use domain accounts for authentication from this point forward.

	○ The local Administrator account becomes the Domain Administrator account.
2	 DHCP authorization. ## Explanation of Exclusions **Why Exclude Manually Configured IP Addresses**: Excluding the IP addresses of WS1 and WS2 prevents the DHCP server from dynamically assigning these addresses to other devices. This ensures that these critical servers retain their static IP addresses, avoiding network conflicts and ensuring reliable network communication.

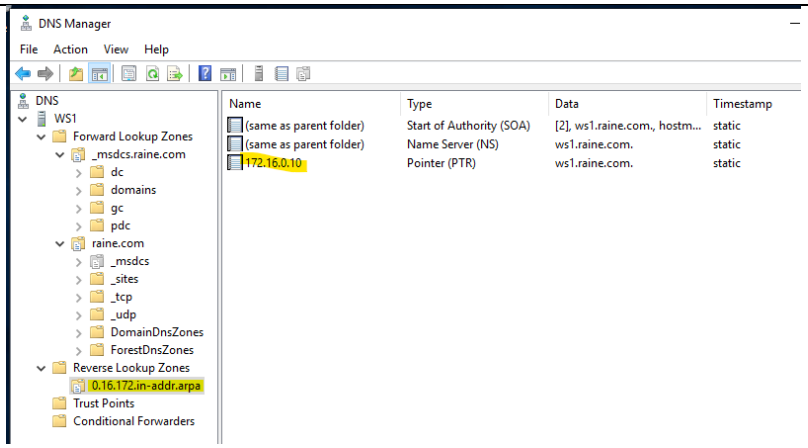
3



Default DNS Entries created automatically during AD DS configuration.



Disable Dynamic updates.

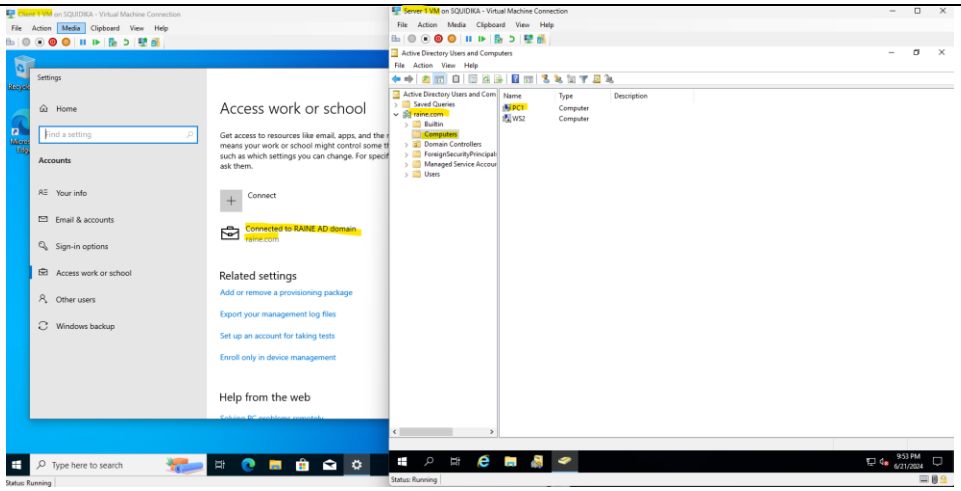
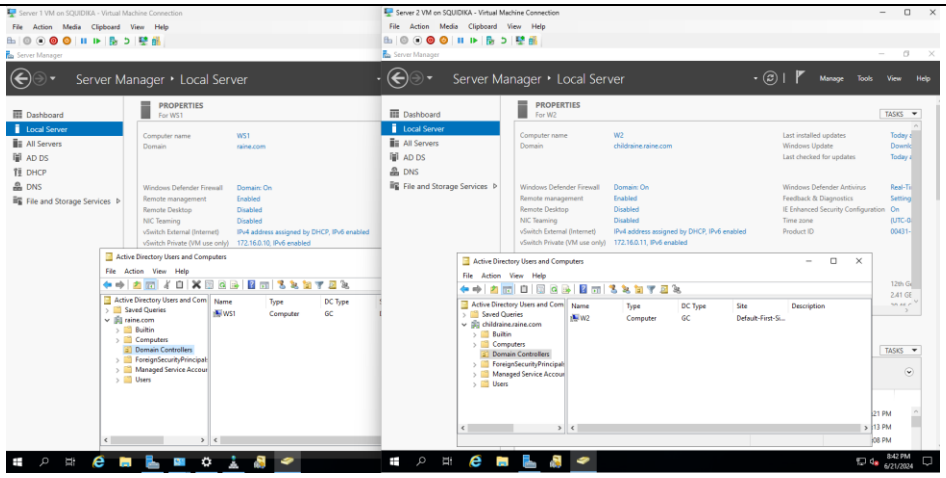
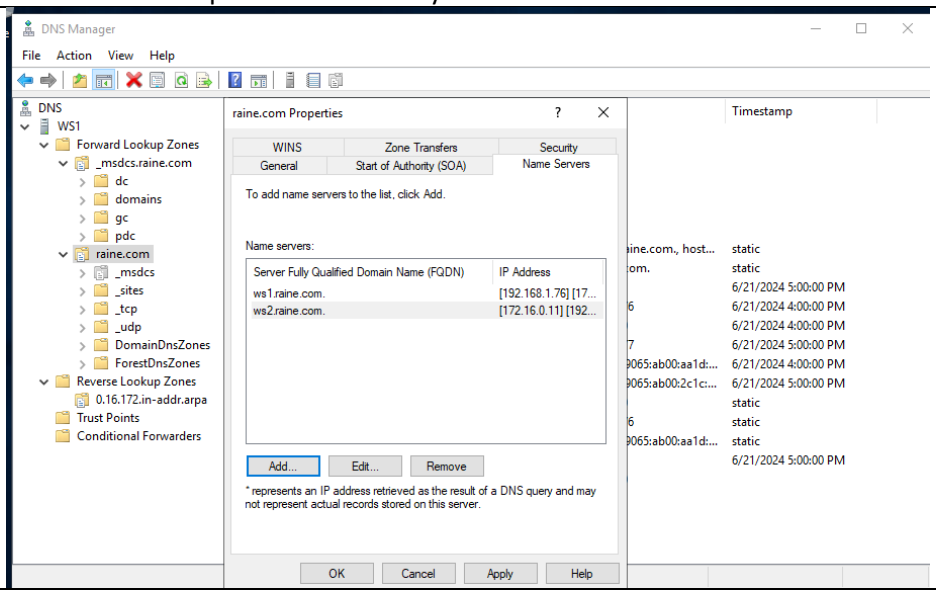


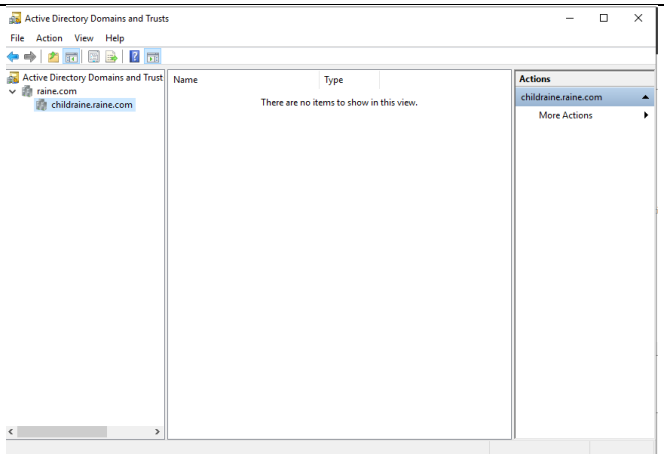
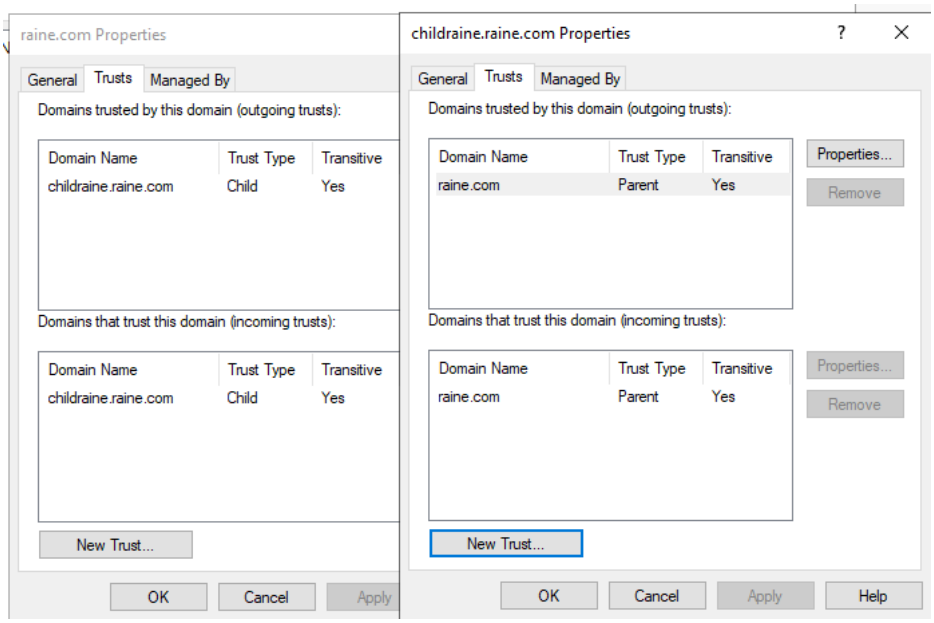
Followed DNS to create new IPv4 Reverse Lookup Zone, new pointer is populating Lookup Zone

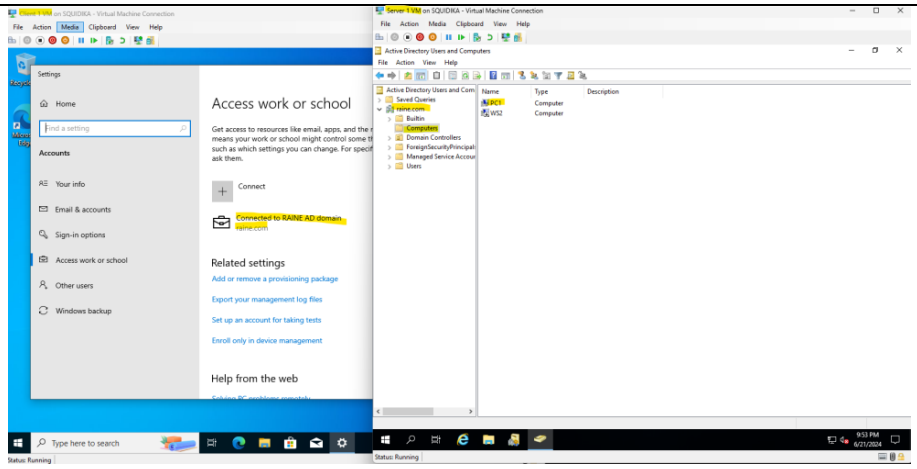
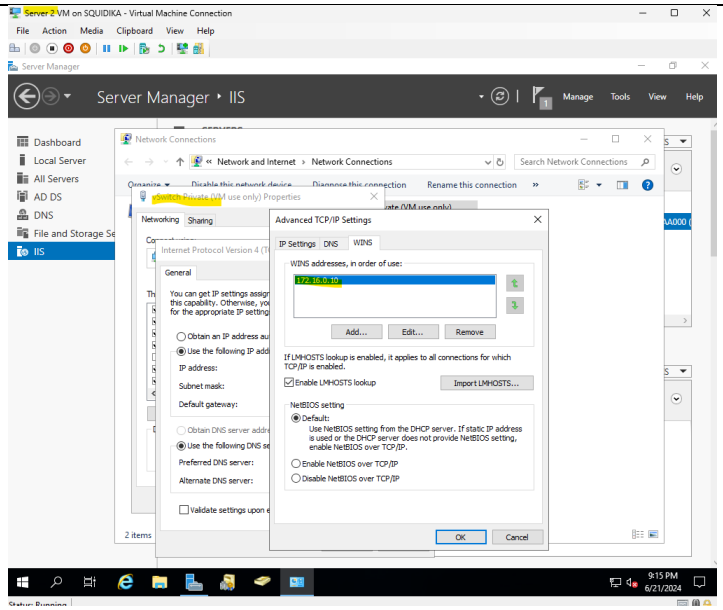
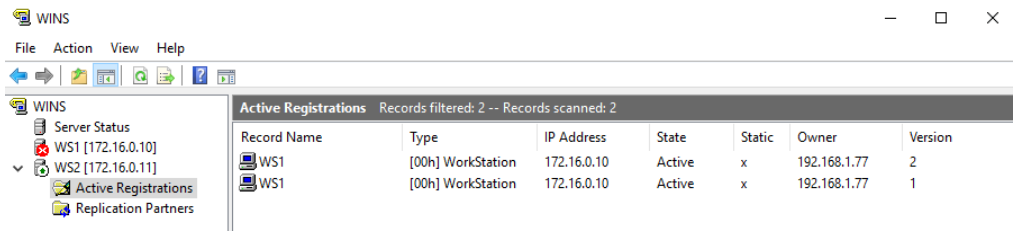
```
Microsoft Windows [Version 10.0.17763.5936]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\Administrator.WS1>nslookup 172.16.0.10
DNS request timed out.
    timeout was 2 seconds.
Server:  UnKnown
Address:  ::1

Name:    ws1.raine.com
Address:  172.16.0.10


C:\Users\Administrator.WS1>_
```

```
C:\Users\Administrator.WS1>nslookup www.raine.com
Server:  UnKnown
Address:  ::1

Name:    www.raine.com
Address:  172.16.0.10


C:\Users\Administrator.WS1>
```

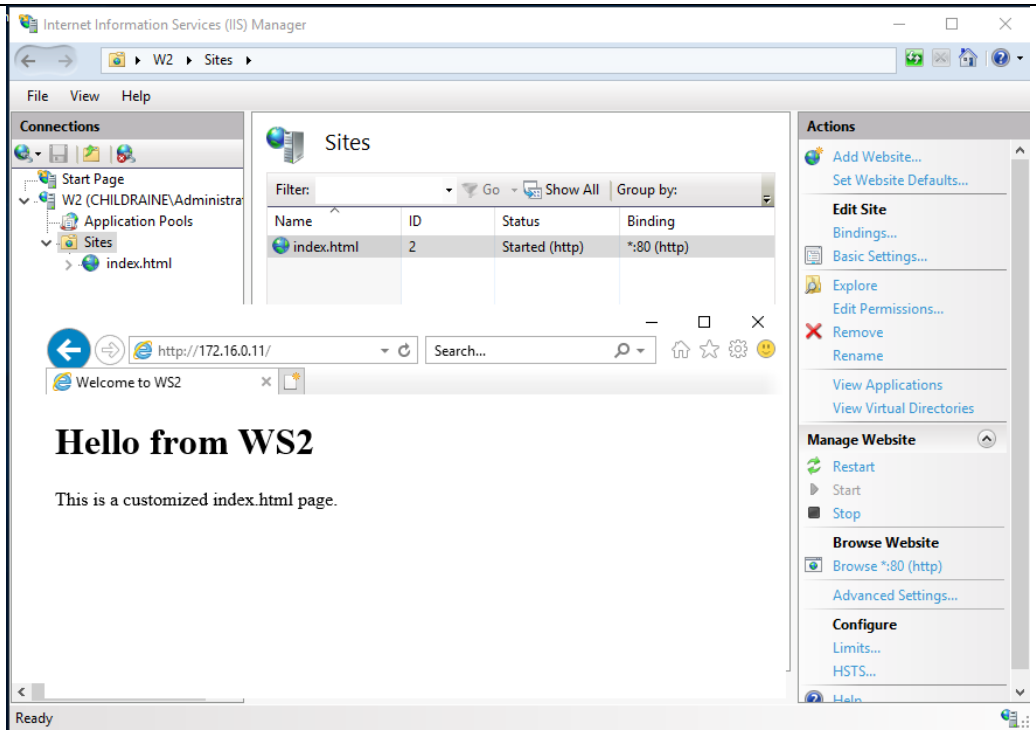
Nslookup resolves the servername

4	 Client device added to the domain raine.com on WS1. WS1 showing PC1 is now populating inside raine.com>computers in AD DS
5	 Install ADDS and promote secondary server to child domain of raine.com
6	

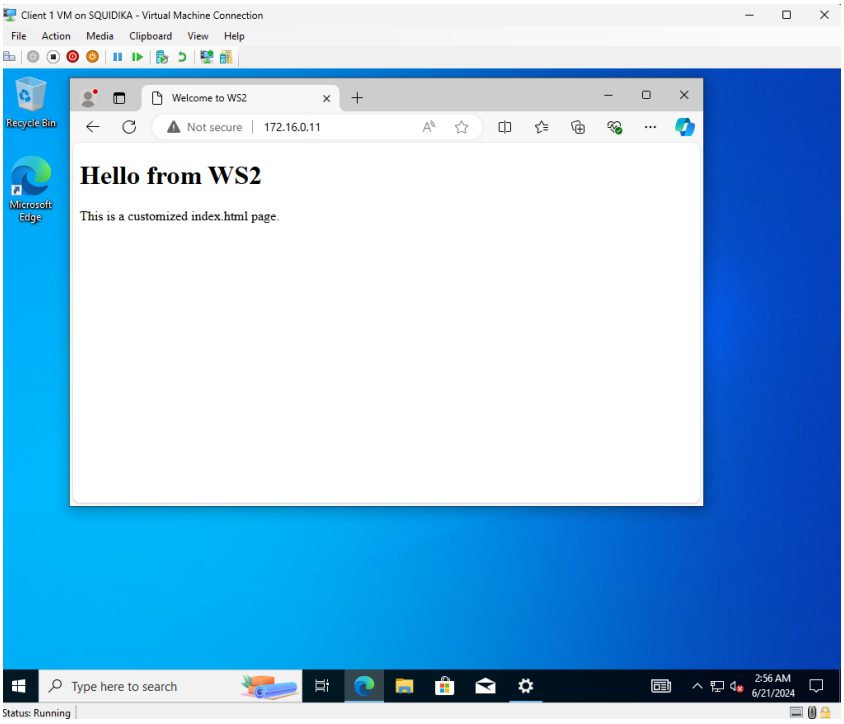
	Installed DNS role on WS2 and added it as a second name server on WS1
7	 Image above shows raine.com as the parent and child.raine.com as the child.  raine.com and child.raine.com trust relationships configured. ## Default Trust Relationship **Default Trust Relationship between Parent and Child Domains**: • **Transitive Trust**: By default, a parent and child domain have a transitive, two-way trust. This means that authentication requests can pass (or transit) between the parent and child domains and any other domains in the forest.

	• **Automatic Creation**: This trust is created automatically when the child domain is added to the parent domain.
8	 Device PC2 connected to the child domain child.raine.com
9	 WINS server configured in IPv4 config of vSwitch Private (VMs only)  WINS server detecting the records scanned for current active registrations of WS1

10



IIS manager showing a custom index.html, with the default website iistart.html removed and the webpage accessed by searching for the domain address 172.16.0.11, the domain address for WS2 child.raine.com.



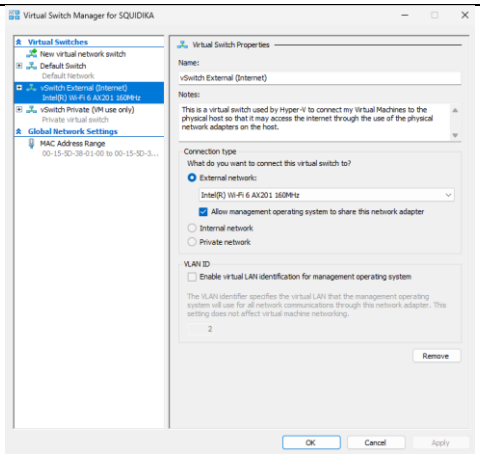
Client PC1 accessing the IIS page using the web browser.

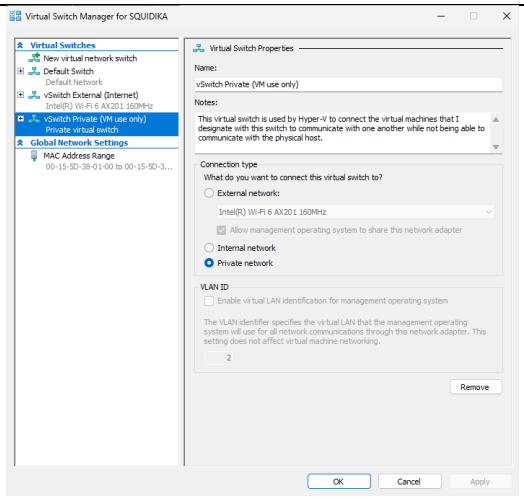
List At the three most useful Internet resources that you used (provided by the tutor)

• nslookup CMD tool for DNS • https://www.youtube.com/watch?v=_6q3wiYzbXg
• WINS configuration   ○ https://www.youtube.com/watch?v=CBsU92nraDk
• Create Parent-child domains and AD replication • https://www.youtube.com/watch?v=1vWSKLX0Xrk

List all (at least three) Internet resources that you found and used that were not provided by the tutor)

https://www.youtube.com/watch?v=gEn8j9vkaMU
Install and Configure the Active Directory Domain Servers (ADDS) role on Server 2016 Virtual Machine (youtube.com)
Installing Windows 10 into a Hyper-V Virtual Machine and Joining an Active Directory Domain (youtube.com)

Problem	Solution
No external access to Internet	 Create a new virtual switch and configure it as an External switch to allow access to the Internet.

No internal communication between both servers	 Create a new virtual switch and configure it as a Private switch to allow the servers to communicate with each other.
DNS Issue during setup of secondary domain controller	When attempting to connect the secondary domain controller to the primary domain controller, there was a DNS issue that was unfixable. To resolve the issue, I had to demote the primary domain controller and promote it again, this fixed the issue and I can only assume I clicked a wrong checkmark the first time I promoted the primary domain controller.