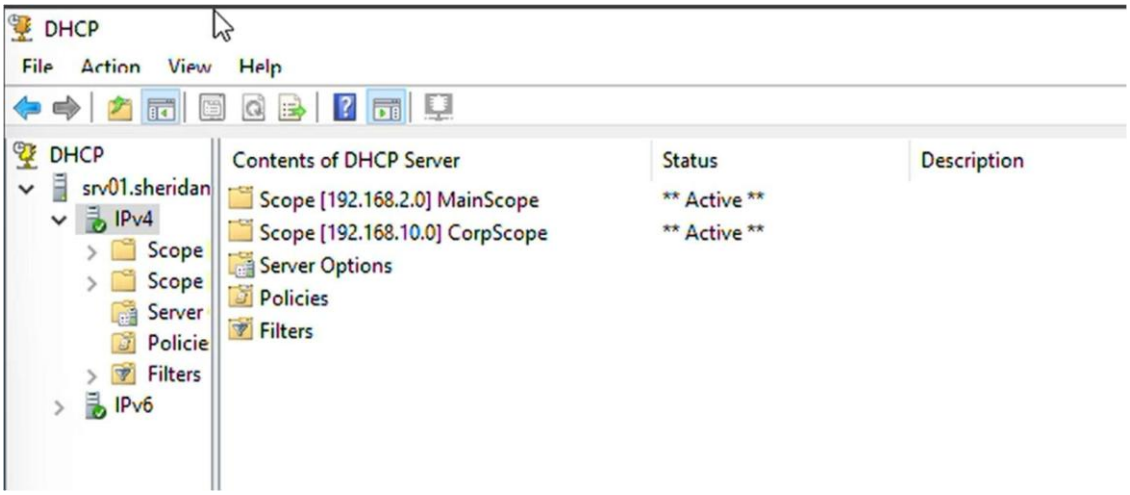
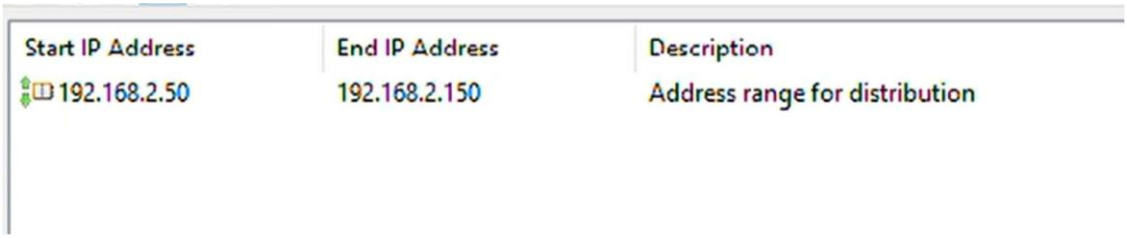
Name: Mahimaa Vardini Balaji Ramathaal

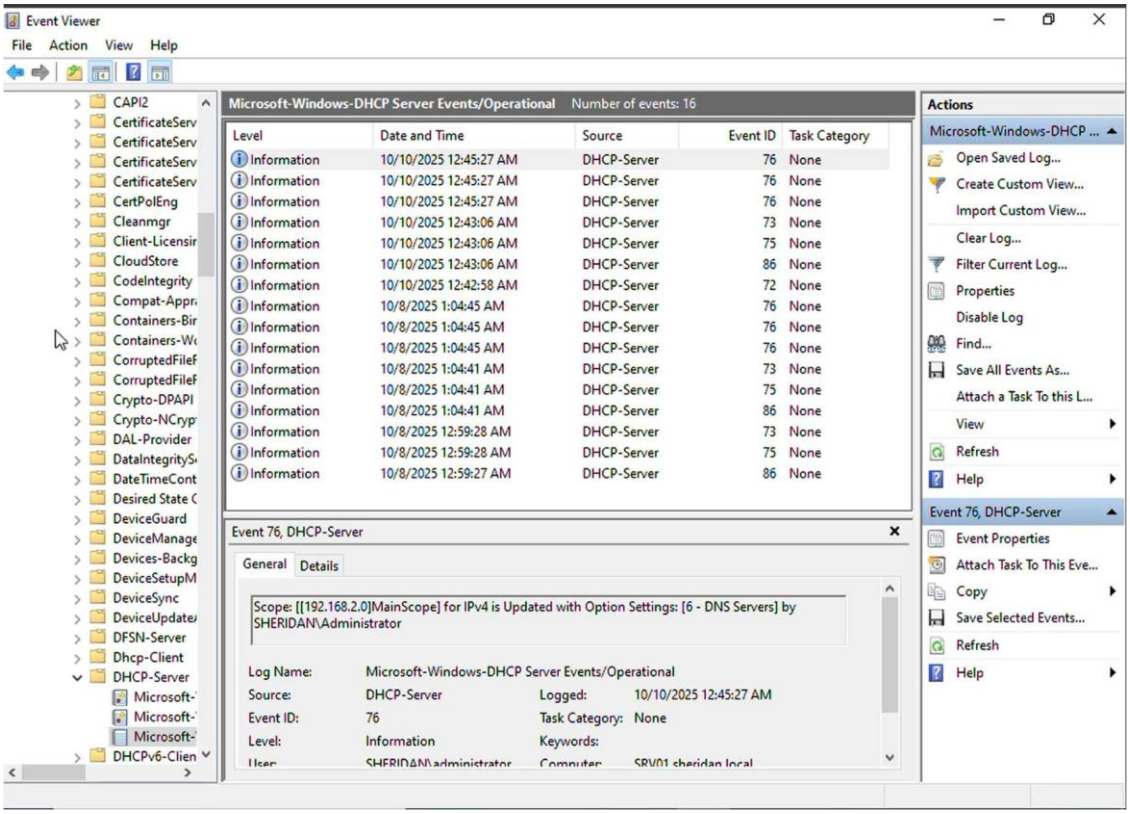
Lab Number: 4

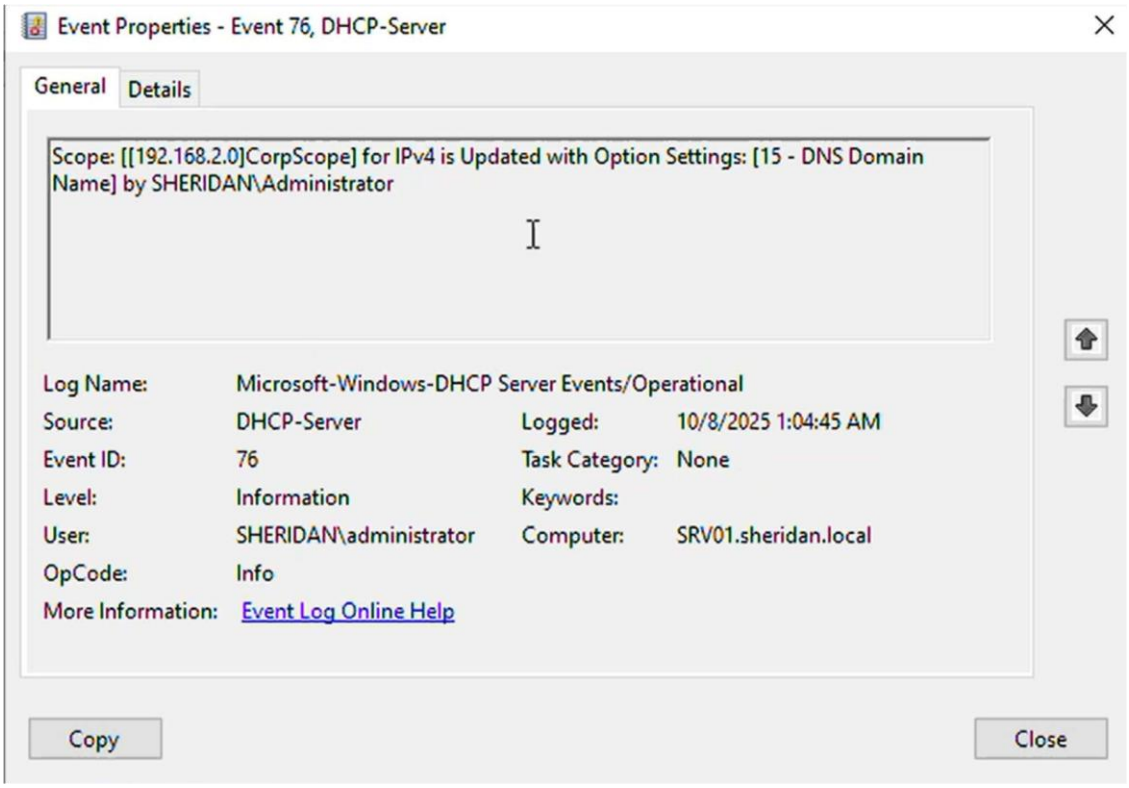
TASK 1 – Install and Secure DHCP Server

```
PS C:\Users\Administrator> Get-DhcpServerv4Scope

ScopeId         SubnetMask      Name            State    StartRange      EndRange        LeaseDuration
-------         ----------      ----            -----    ----------      --------        -------------
192.168.2.0     255.255.255.0   MainScope       Active   192.168.2.50    192.168.2.150   8.00:00:00
192.168.10.0    255.255.255.0   CorpScope       Active   192.168.10.100  192.168.10.200  8.00:00:00
```







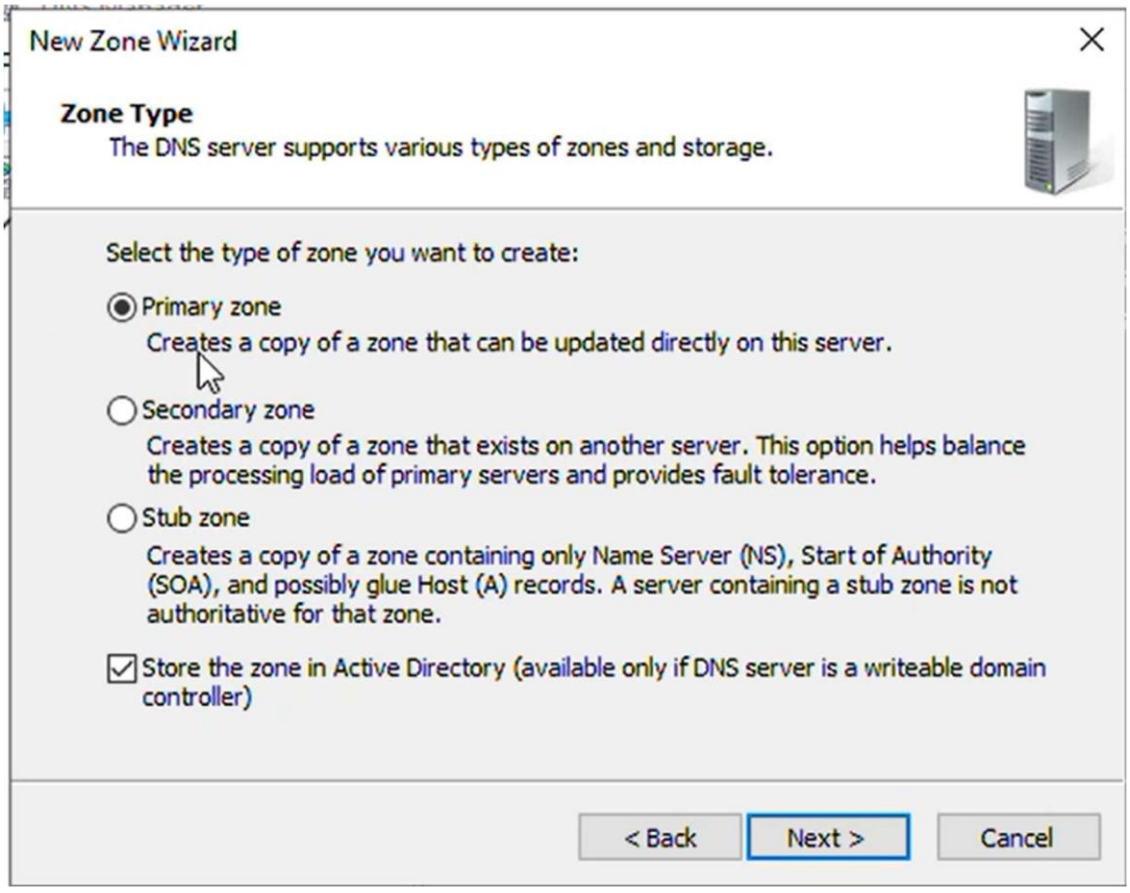


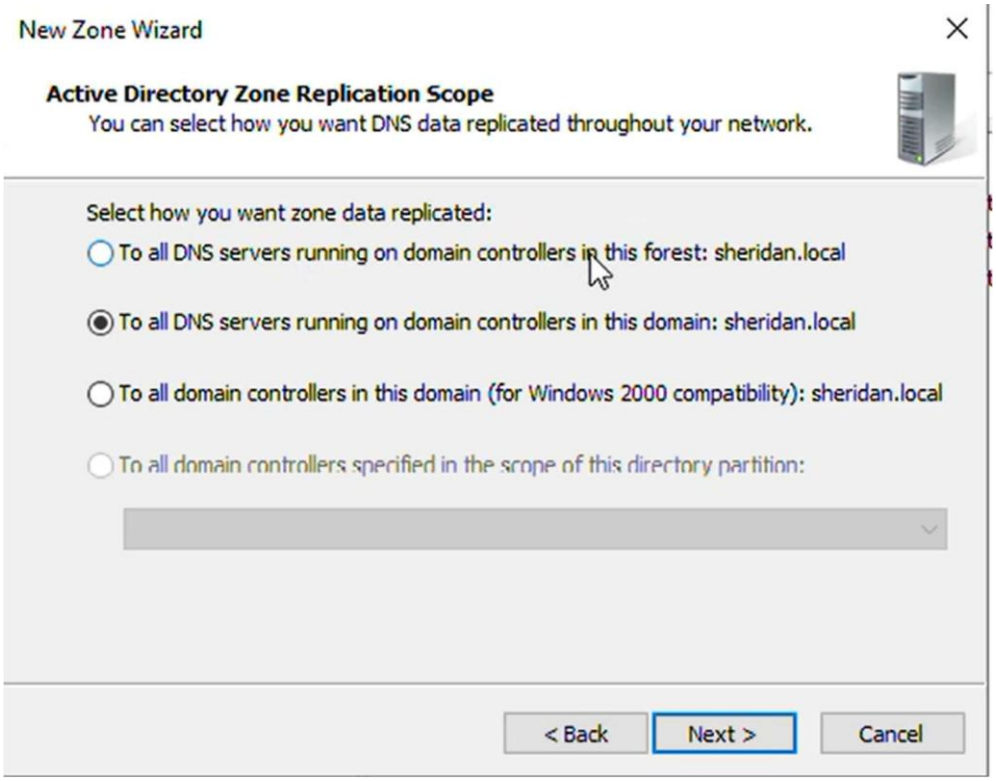
- Research Direction: What is a rogue DHCP server attack? How does AD authorization mitigate it?

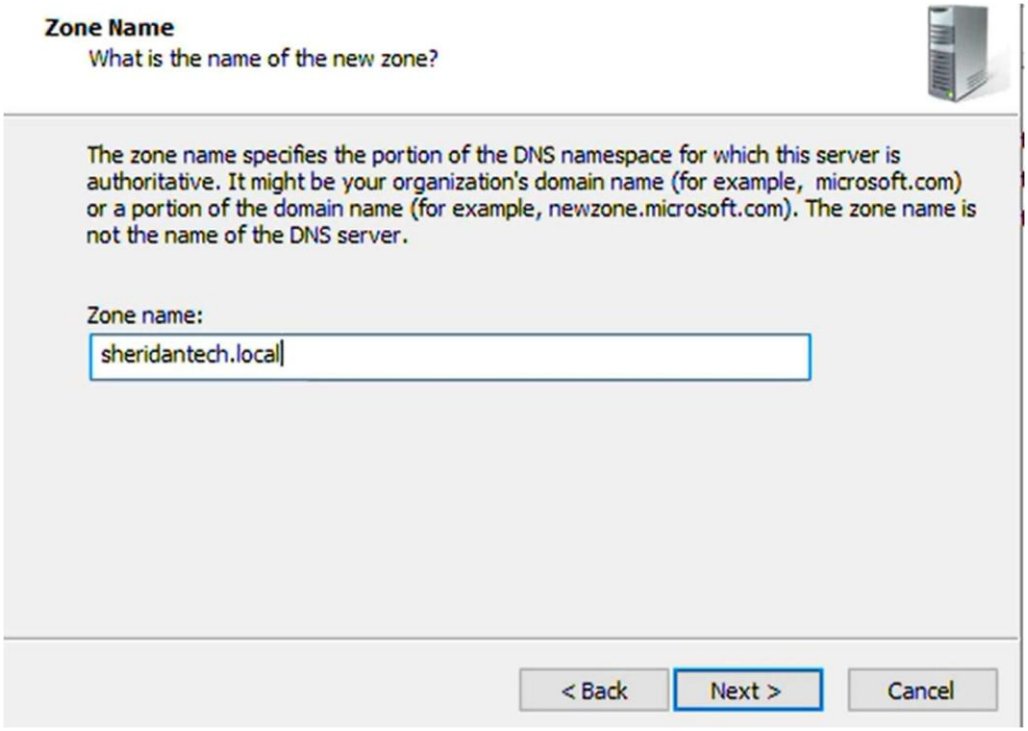
A rogue DHCP server attack happens when a malicious device on a network pretends to be a legitimate DHCP server to intercept traffic. Active directory authorization helps mitigate this by not allowing unauthorized DHCP servers to operate on the network.

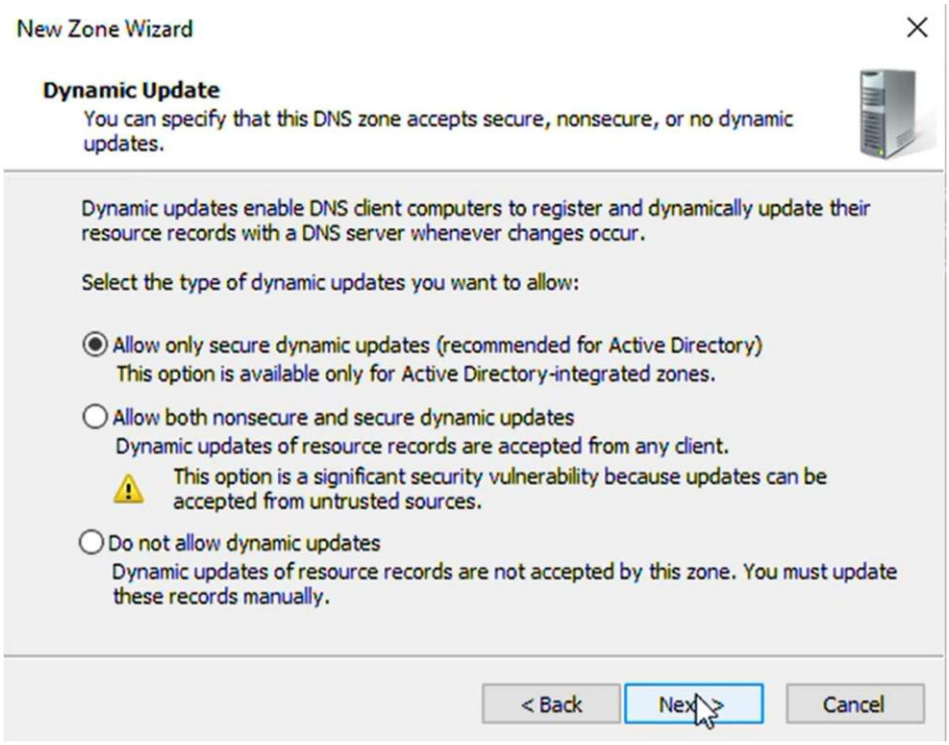
TASK 2 – CREATE AND SECURE DNS ZONES

```
PS C:\Users\Administrator> Get-DnsServerZone

ZoneName                          ZoneType        IsAutoCreated   IsDsIntegrated  IsReverseLookupZone  IsSigned
--------                          --------        -------------   --------------  -------------------  --------
_msdcs.sheridan.local             Primary         False           True            False                False
0.2.168.192.in-addr.arpa          Primary         False           True            True                 False
0.in-addr.arpa                    Primary         True            False           True                 False
127.in-addr.arpa                  Primary         True            False           True                 False
2.168.192.in-addr.arpa            Primary         False           True            True                 False
255.in-addr.arpa                  Primary         True            False           True                 False
sheridan.local                    Primary         False           True            False                False
sheridantech.local                Primary         False           True            False                False
TrustAnchors                      Primary         False           True            False                False
```

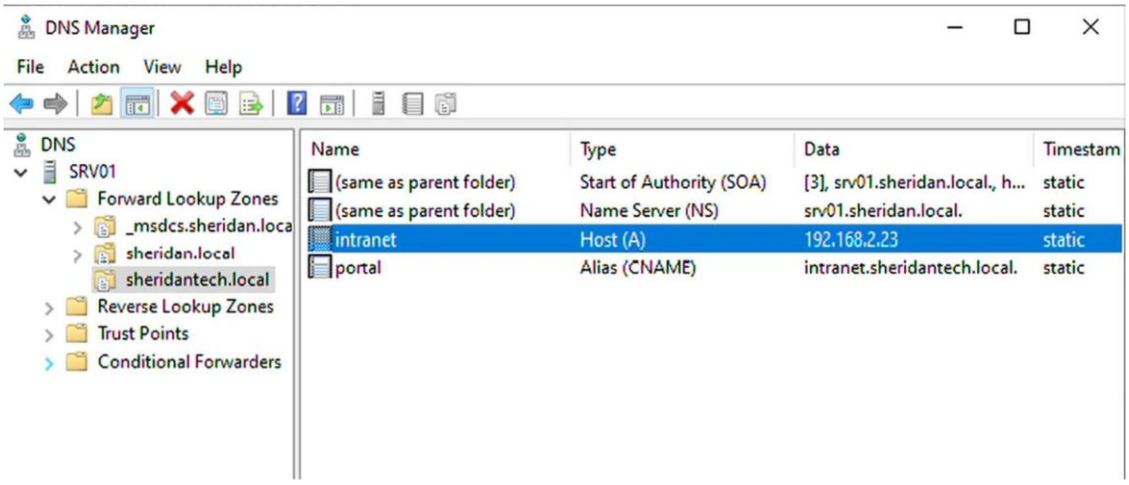



New Zone Wizard
Active Directory Zone Replication Scope
You can select how you want DNS data replicated throughout your network.
Select how you want zone data replicated:
To all DNS servers running on domain controllers in this forest: sheridan.local
To all DNS servers running on domain controllers in this domain: sheridan.local
To all domain controllers in this domain (for Windows 2000 compatibility): sheridan.local
To all domain controllers specified in the scope of this directory partition:
< Back
Next >
Cancel

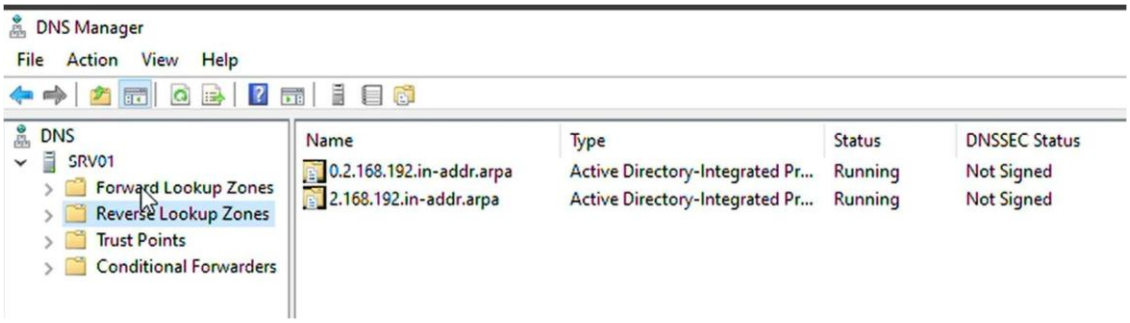

Zone Name
What is the name of the new zone?
The zone name specifies the portion of the DNS namespace for which this server is authoritative. It might be your organization's domain name (for example, microsoft.com) or a portion of the domain name (for example, newzone.microsoft.com). The zone name is not the name of the DNS server.
Zone name:
sheridantech.local
< Back
Next >
Cancel

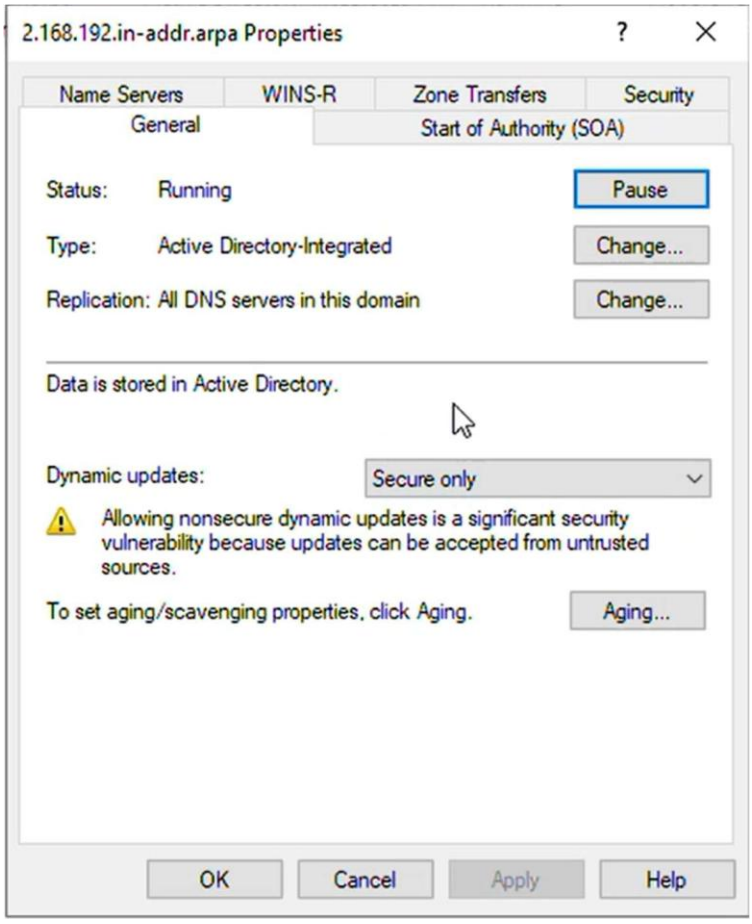


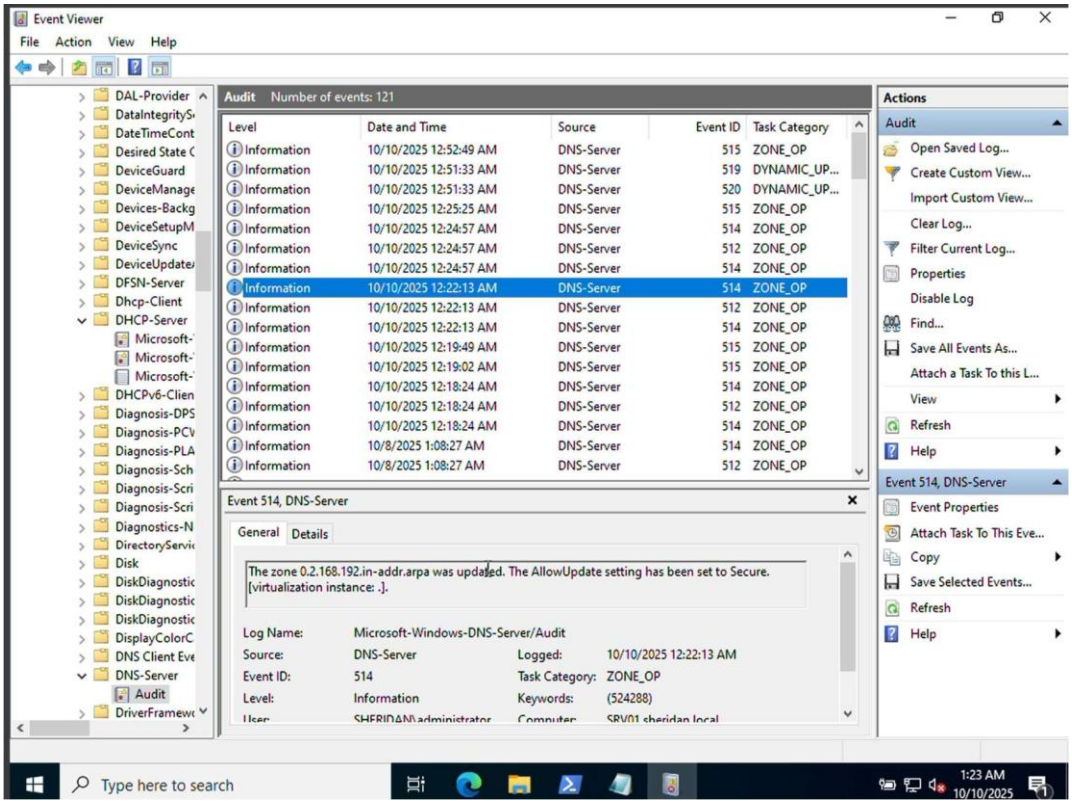

```
PS C:\Users\Administrator> Get-DnsServerResourceRecord -ZoneName "sheridantech.local"

HostName                  RecordType Type       Timestamp            TimeToLive      RecordData
--------                  ---------- ----       ---------            ----------      ----------
@                         NS         2          0                    01:00:00        srv01.sheridan.local.
@                         SOA        6          0                    01:00:00        [3][srv01.sheridan.local.][host...
intranet                  A          1          0                    01:00:00        192.168.2.23
portal                    CNAME      5          0                    01:00:00        intranet.sheridantech.local.
```



```
PS C:\Users\Administrator> Resolve-DnsName intranet.sheridantech.local

Name                                           Type   TTL   Section    IPAddress
----                                           ----   ---   -------    ---------
intranet.sheridantech.local                    A      3600  Answer     192.168.2.23


PS C:\Users\Administrator> Resolve-DnsName 192.168.2.23

Name                           Type   TTL   Section    NameHost
----                           ----   ---   -------    --------
23.2.168.192.in-addr.arpa.     PTR    1200  Question   SRV01.sheridan.local
```





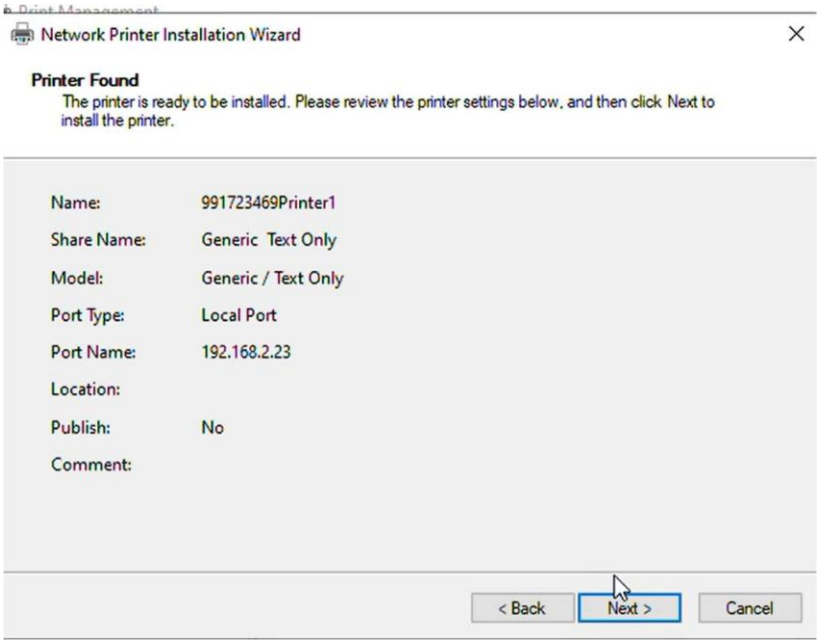


- Research Direction: What is DNS cache poisoning? How do secure updates and DNSSEC help mitigate it?

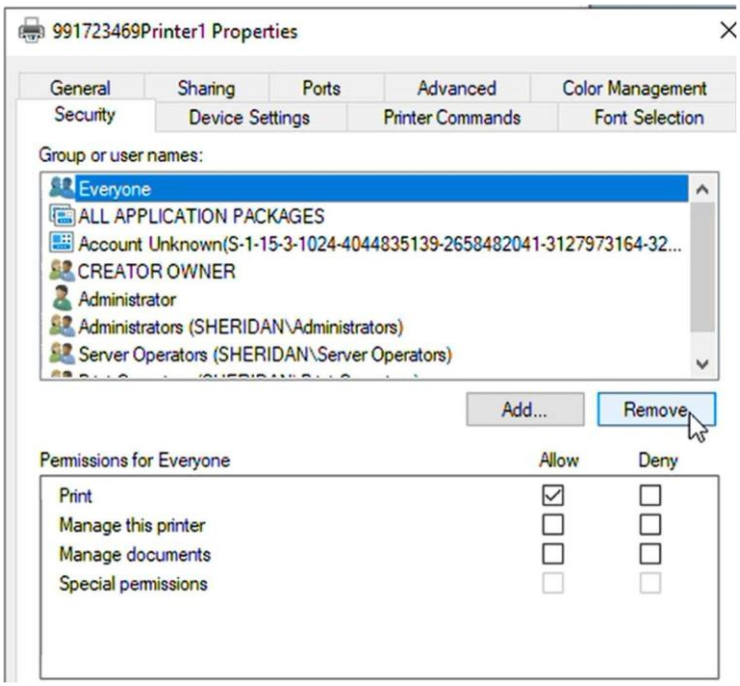
  DNS cache poisoning happens when an attacker injects malicious DNS data to redirect users and manipulate browsers. Secure updates and DNSSEC help prevent such attacks as it validates the authenticity of DNS responses.

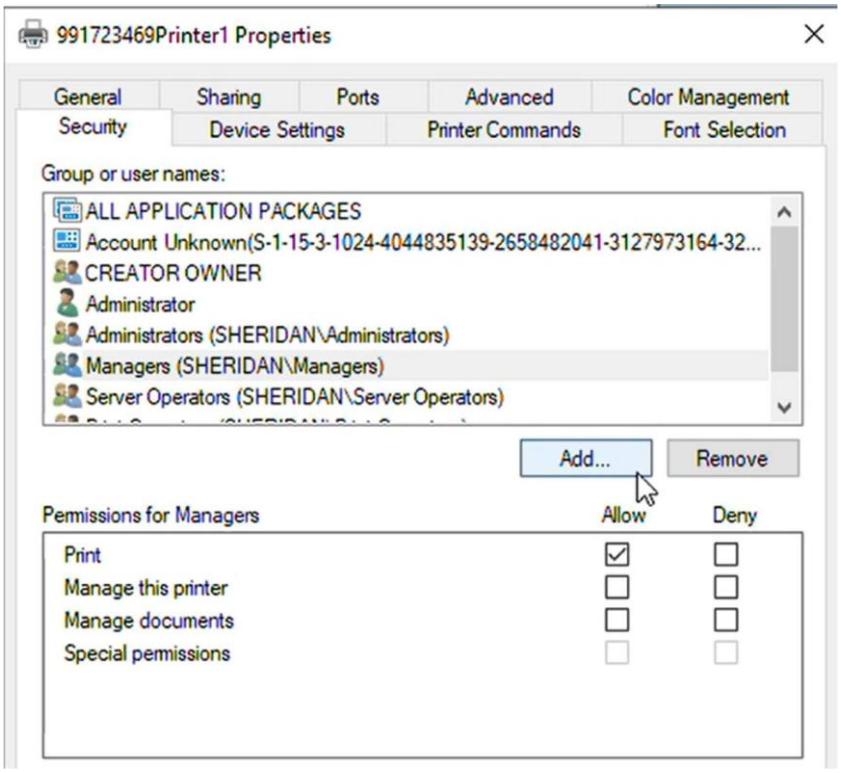
TASK 3 – PRINT SERVER DEPLOYMENT

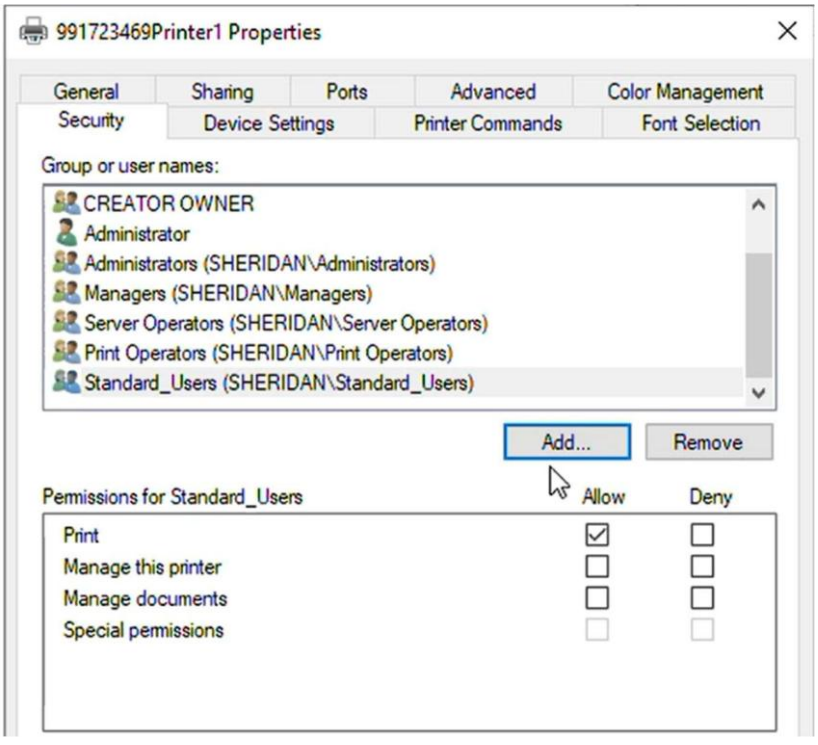
Creating a new printer called 991723469Printer1



Removing access from “Everyone” and only granting access to Standard Users and Managers the privilege to print



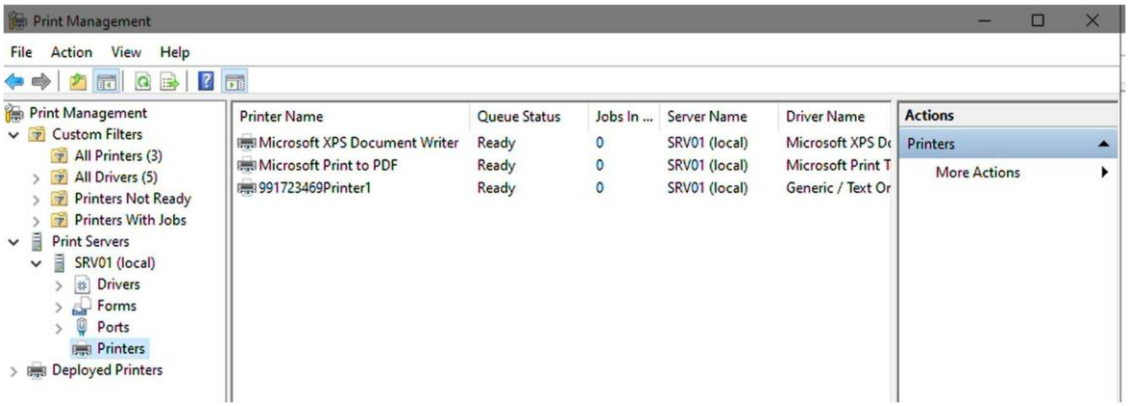


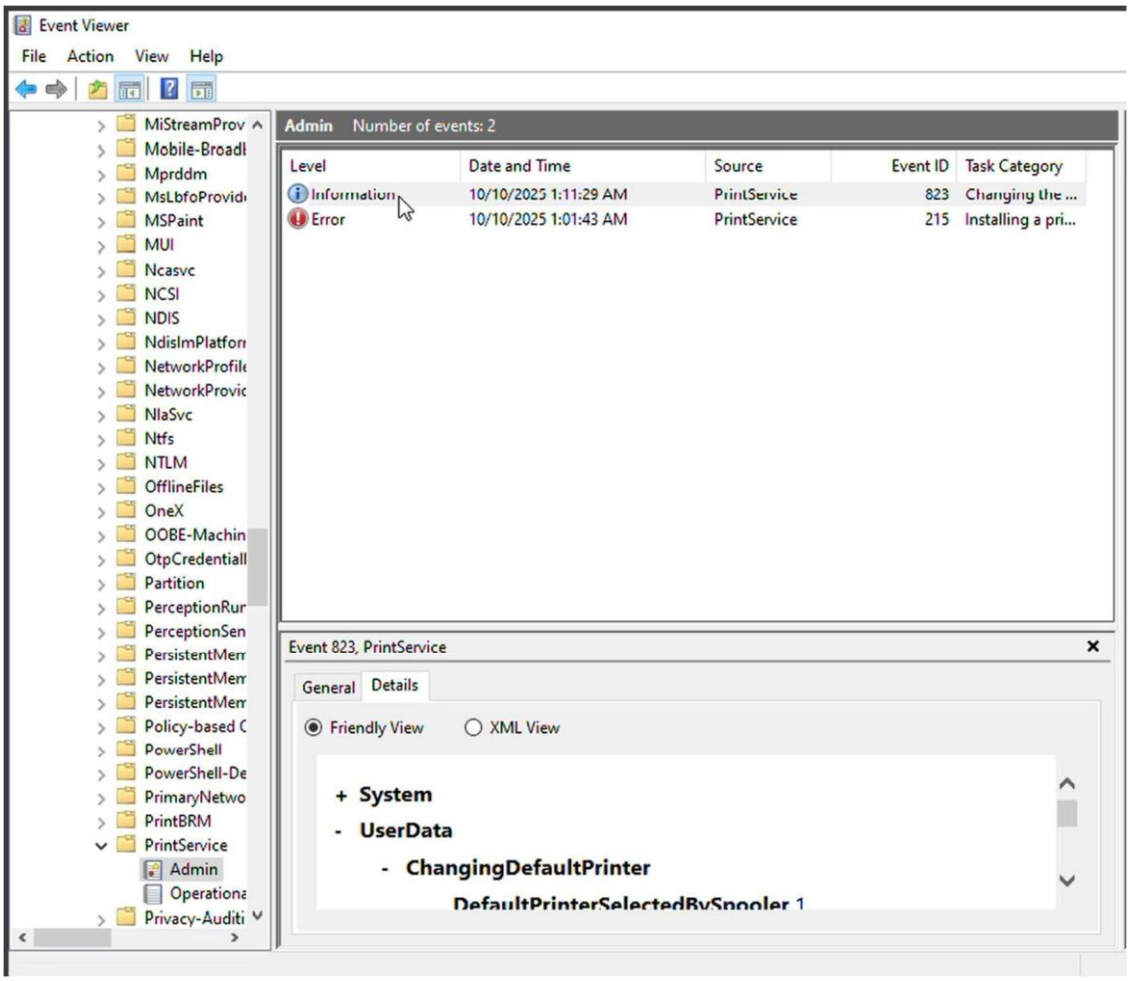


Restricting Driver Installation to prevent Print Nightmare vulnerability

```
PS C:\Users\Administrator> New-Item -Path "HKLM:\Software\Policies\Microsoft\Windows NT\Printers" -Name "PointAndPrint"
-Force


    Hive: HKEY_LOCAL_MACHINE\Software\Policies\Microsoft\Windows NT\Printers


Name                           Property
----                           --------
PointAndPrint


PS C:\Users\Administrator> Set-ItemProperty "HKLM:\Software\Policies\Microsoft\Windows NT\Printers\PointAndPrint" -Name
"RestrictDriverInstallationToAdministrators" -Value 1 -Type DWord
PS C:\Users\Administrator> Get-ItemProperty -Path "HKLM:\Software\Policies\Microsoft\Windows NT\Printers\PointAndPrint"



RestrictDriverInstallationToAdministrators : 1
PSPath                                     : Microsoft.PowerShell.Core\Registry::HKEY_LOCAL_MACHINE\Software\Policies\M
                                             icrosoft\Windows NT\Printers\PointAndPrint
PSParentPath                               : Microsoft.PowerShell.Core\Registry::HKEY_LOCAL_MACHINE\Software\Policies\M
                                             icrosoft\Windows NT\Printers
PSChildName                                : PointAndPrint
PSDrive                                    : HKLM
PSProvider                                 : Microsoft.PowerShell.Core\Registry
```

```
PS C:\Users\Administrator> Get-Printer

Name                      ComputerName    Type         DriverName                PortName        Shared   Published  De
                                                                                                                      vi
                                                                                                                      ce
                                                                                                                      Ty
                                                                                                                      pe
----                      ------------    ----         ----------                --------        ------   ---------  --
991723469Printer1                         Local        Generic / Text Only       192.168.2.23    True     False      Pr
Microsoft Print to PDF                    Local        Microsoft Print To PDF    PORTPROMPT:     False    False      Pr
Microsoft XPS Document Writer             Local        Microsoft XPS Document... PORTPROMPT:     False    False      Pr
```





- Research Direction: What was the Print Nightmare vulnerability, and why must Print Spooler be hardened?

  The PrintNightmare vulnerability allowed attackers to run code remotely using Print Spooler, so by hardening it using restrictions to driver installation makes it so that new driver installation is restricted unless under administrator supervision.

  <u>Reflection</u>

  Which of the three services poses the biggest security risk and why?

  Based on my research and observation from doing this lab, I think Print Spooler probably poses the biggest security risk as it runs with high privileges easily. Since the spooler interacts with user drivers and network shares, it is very easy to unintentionally misconfigure it wring and allow attackers to execute malicious code remotely and gain elevated privileges on the system. But we can restrict this by performing restrictions to driver installations to administrators,

  disabling remote printing when not necessary and overall reducing the attack vector.