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LAB 3

EXERCISE 1: PLANNING IP ADDRESSES FOR THE NETWORK

- IPv4 Network: 172.35.10.0/24

- Subnet Mask: 255.255.255.0

- Gateway: 172.35.10.1

- IP address for Servers: DC1, DC2, Web, VPN, DNS, DHCP, File,…

- DC1: 172.35.10.11
- DC2: 172.35.10.12
- Win 10 Workstation: 172.35.10.13
- Others: 172.35.10.14 – 172.35.10.30

- IP address for special devices: Printer, scanner, switch, routers,…

- Switch: 172.35.10.2
- Router 1: 172.35.10.3
- Router 2: 172.35.10.4
- Others: 172.35.10.5 – 172.35.10.10

- IP range for DHCP: 172.35.10.31 - 172.35.10.240

- Reservation IP:

- 172.35.10.5 – 172.35.10.10
- 172.35.10.14 – 172.35.10.30
- 172.35.10.241 - 172.35.10.254

EXERCISE 2: MANUALLY CONFIGURING TCP/IP

	DC1	DC2	Win 10 Workstation
IP Address	172.35.10.11	172.35.10.12	172.35.10.13
Subnet Mask	255.255.255.0	255.255.255.0	255.255.255.0
Preferred DNS Server	172.35.10.11	172.35.10.12	172.35.10.11

```
Administrator: Windows PowerShell

PS C:\Windows\system32> ping -n 3 172.35.10.11

Pinging 172.35.10.11 with 32 bytes of data:
Reply from 172.35.10.11: bytes=32 time<1ms TTL=128
Reply from 172.35.10.11: bytes=32 time<1ms TTL=128
Reply from 172.35.10.11: bytes=32 time<1ms TTL=128

Ping statistics for 172.35.10.11:
    Packets: Sent = 3, Received = 3, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
PS C:\Windows\system32> ipconfig

Windows IP Configuration


Ethernet adapter Ethernet:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::ac86:e6e0:8558:ce6e%11
   IPv4 Address. . . . . . . . . . . : 172.35.10.13
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : 172.35.10.1
PS C:\Windows\system32>
```
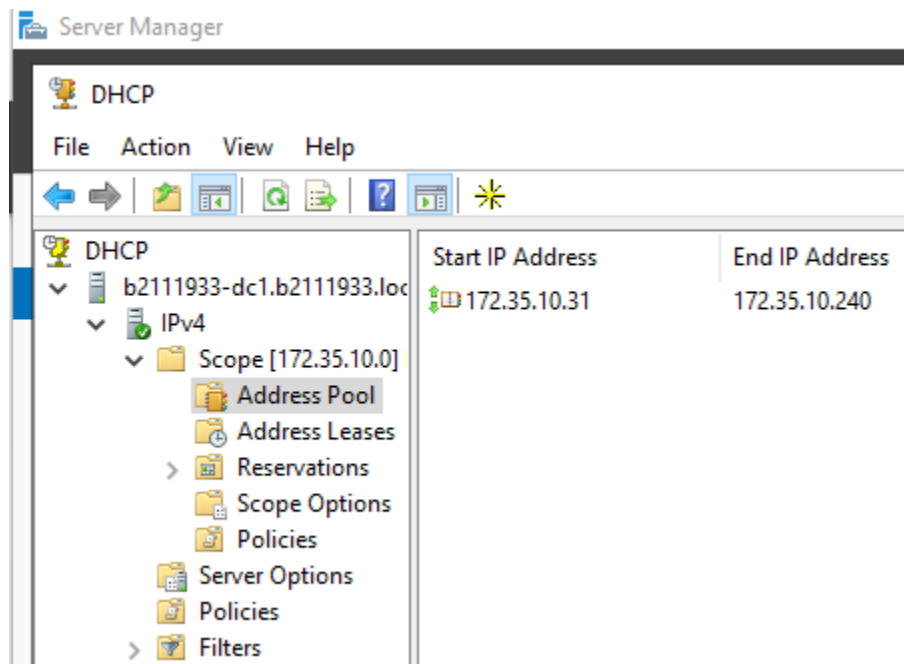
Test connectivity between DC1 and Win 10 Workstation

EXERCISE 3: INSTALLING DHCP SERVER ROLE
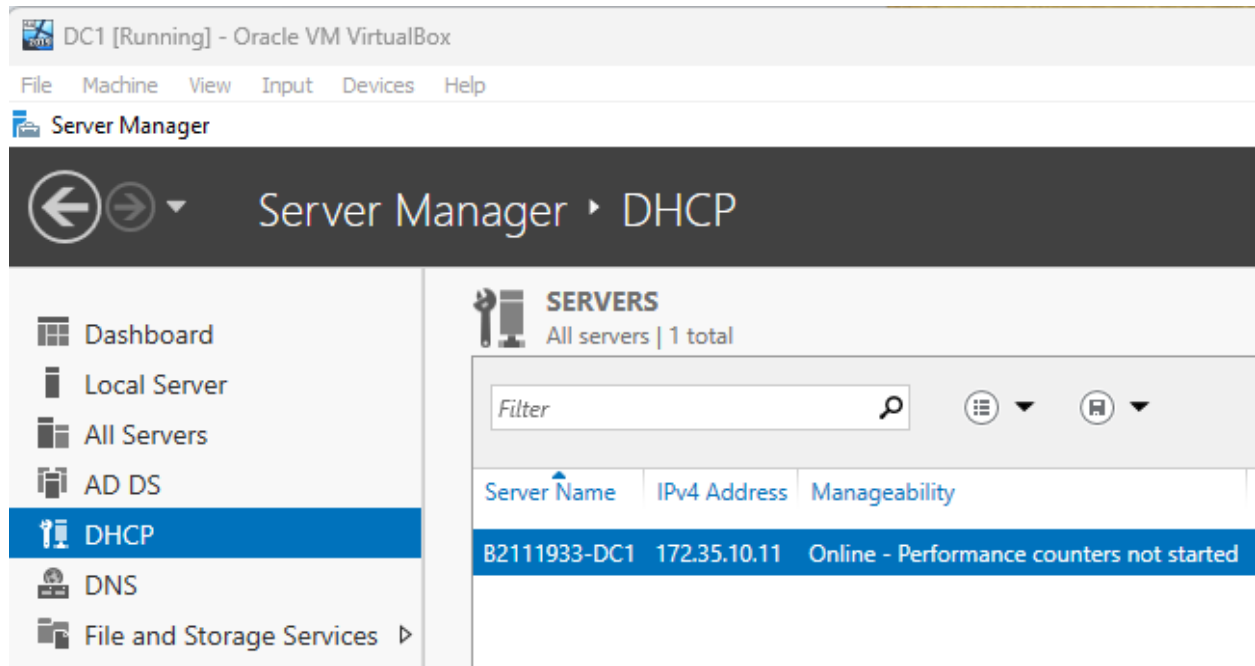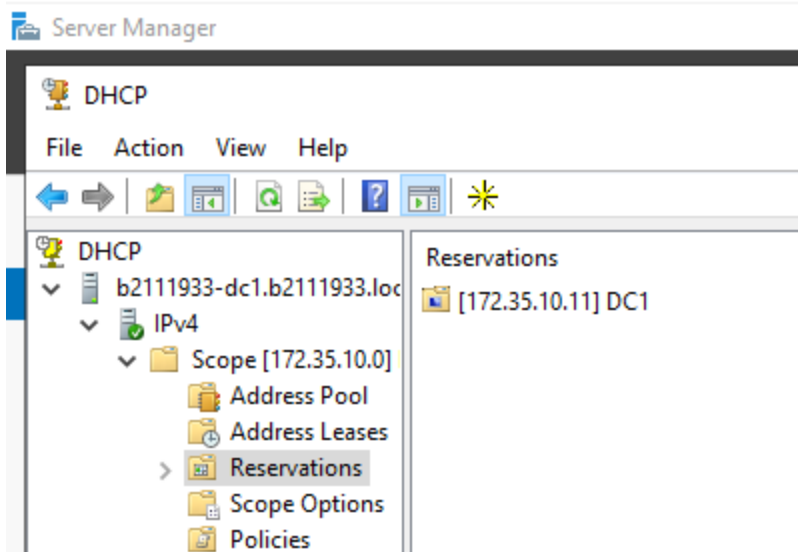

DHCP installed

EXERCISE 4: CREATING A DHCPV4 SCOPE

Create DHCPV4 Scope

Add DC1 as Reservation (just for practice, IPv4 of DC1 is not in DHCP Scope)

Challenge:

- Confirming that DHCP work: demonstrate that a computer can automatically obtain IP from DHCP.

A Windows 10 VM can automatically obtain IP from DHCP

- Creating a DHCPv6 Scope

Ipv6 of DC1
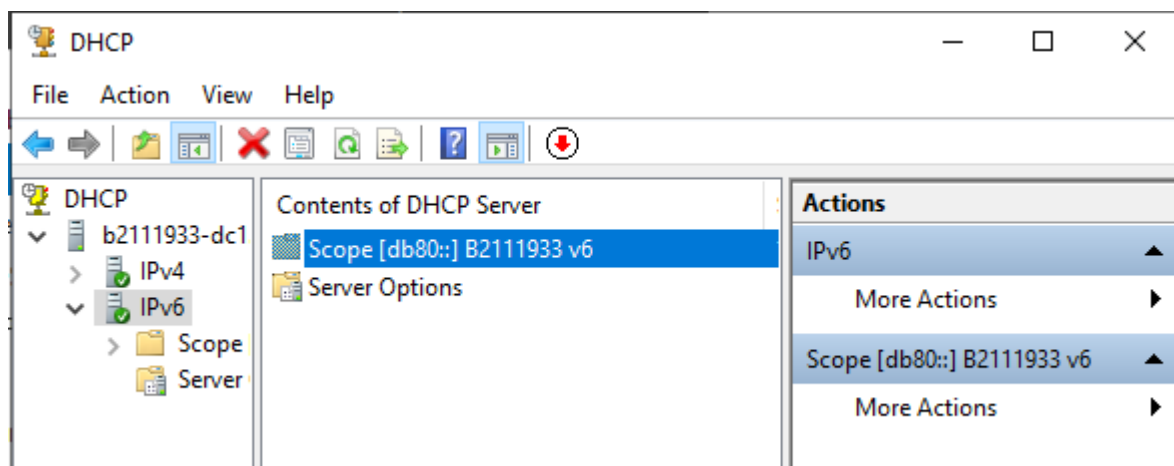
Create a DHCPv6 Scope

- What is DHCP superscope? Installing and configuring a superscope

A DHCP superscope is a collection of individual scopes that are grouped together for administrative purposes. It allows a DHCP server to provide leases from more than one scope to clients on a single physical network, making it useful in multinet configurations where multiple logical networks exist on a single physical network. Superscopes simplify management, improve scalability, and offer increased flexibility in IP address allocation.
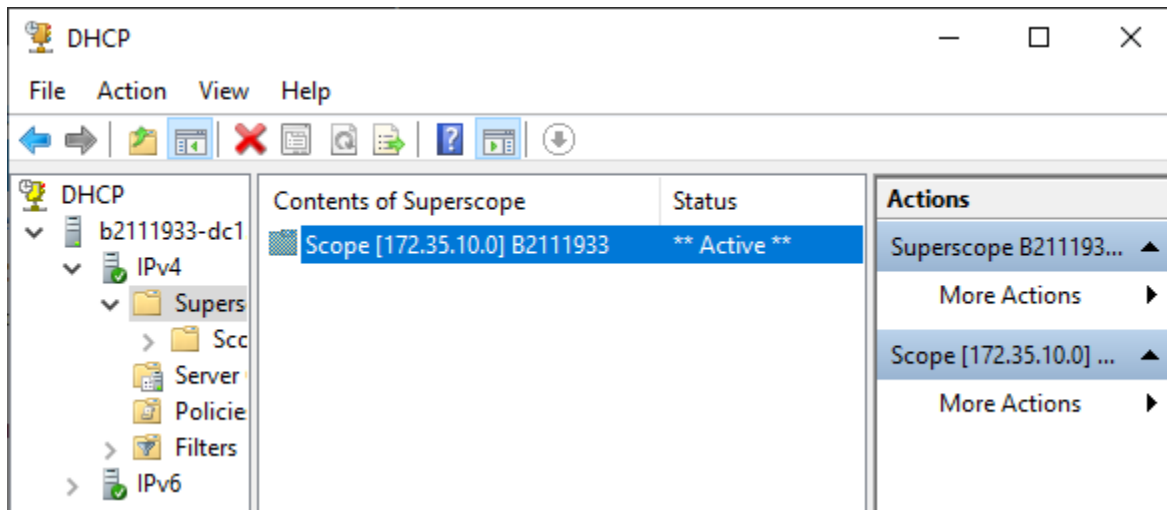
Install and configure a superscope

- What is DHCP Relay agent?

DHCP Relay Agent is a network device that acts as a middleman between DHCP clients (like computers, smartphones, and tablets) and DHCP servers. When a client needs an IP address, it sends a DHCP Discover message to the relay agent. The relay agent then forwards the message to the DHCP server. Once the server assigns an IP address, it sends it back to the relay agent, which then passes it on to the client. This process ensures that clients can obtain IP addresses even when they are physically distant from the DHCP server.

EXERCISE 5: INSTALL AND CONFIGURE DNS SERVERS

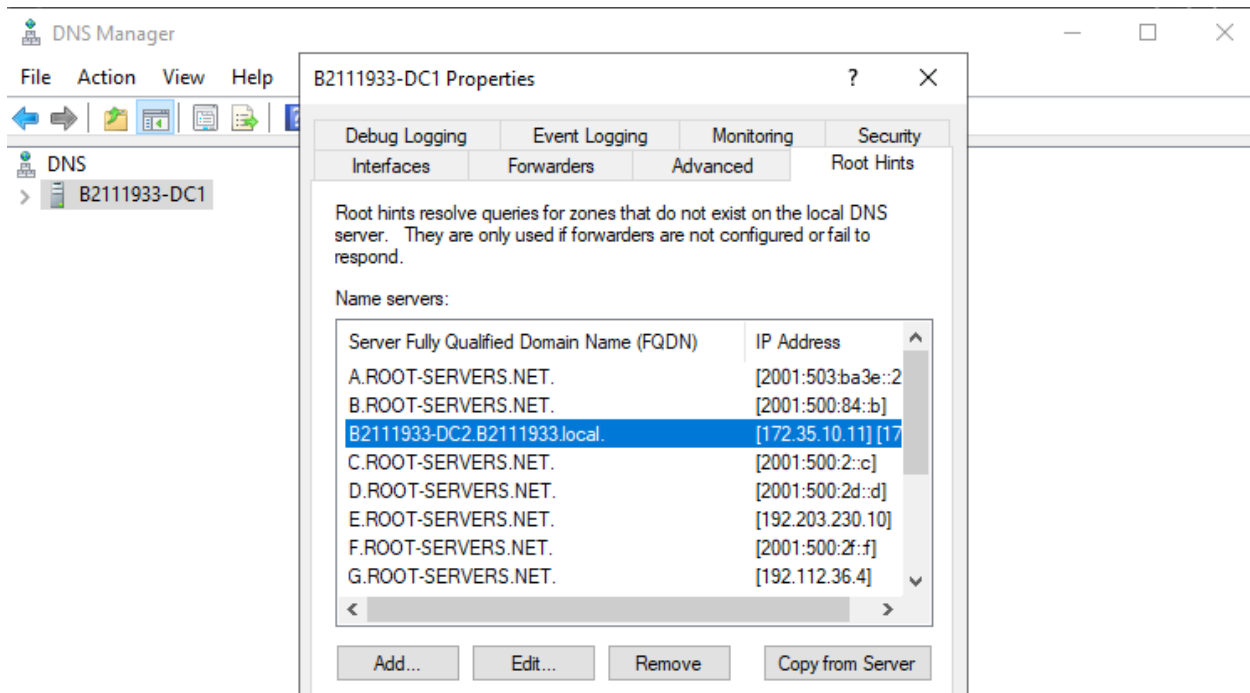

Install DNS server

EXERCISE 6: CONFIGURE FORWARDERS, ROOT HINTS, AND RECURSION
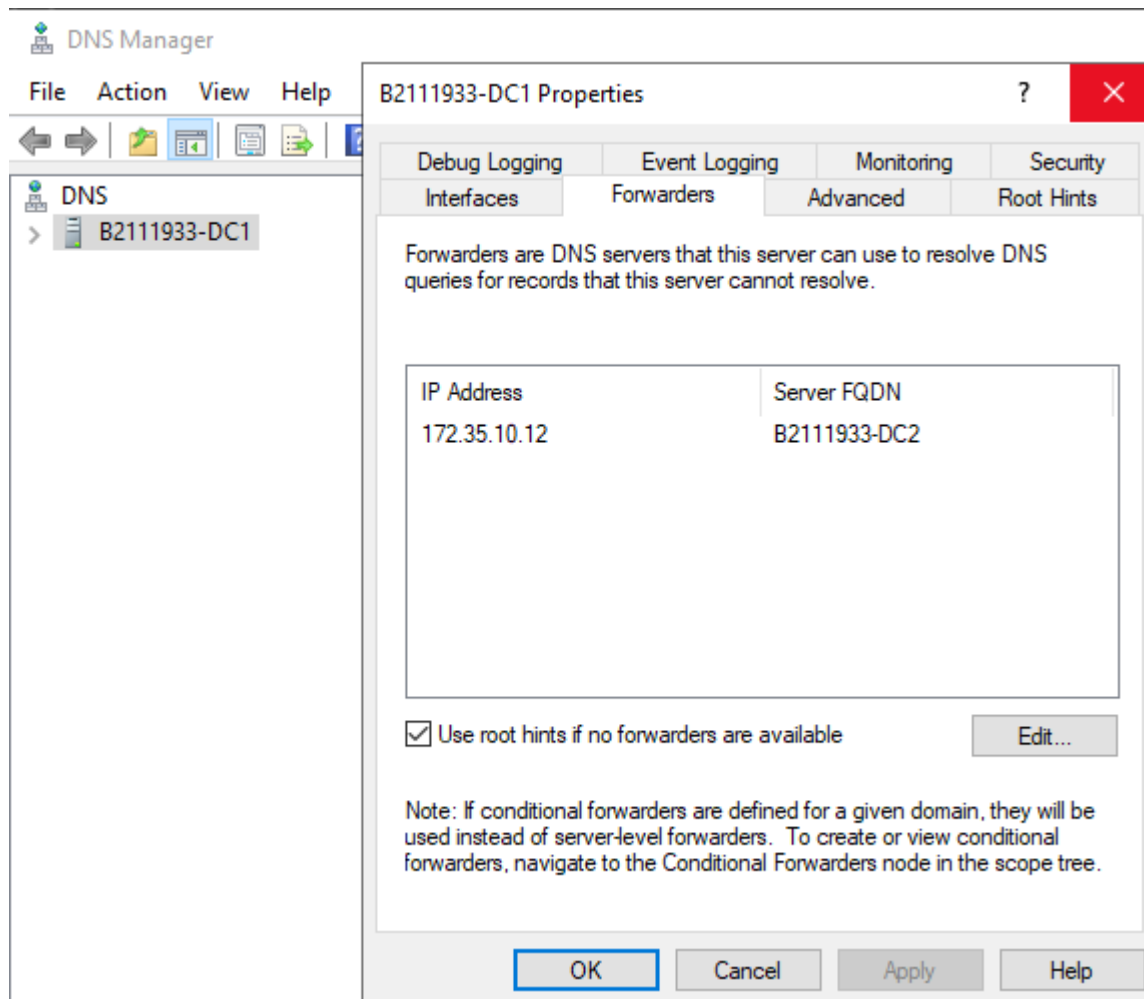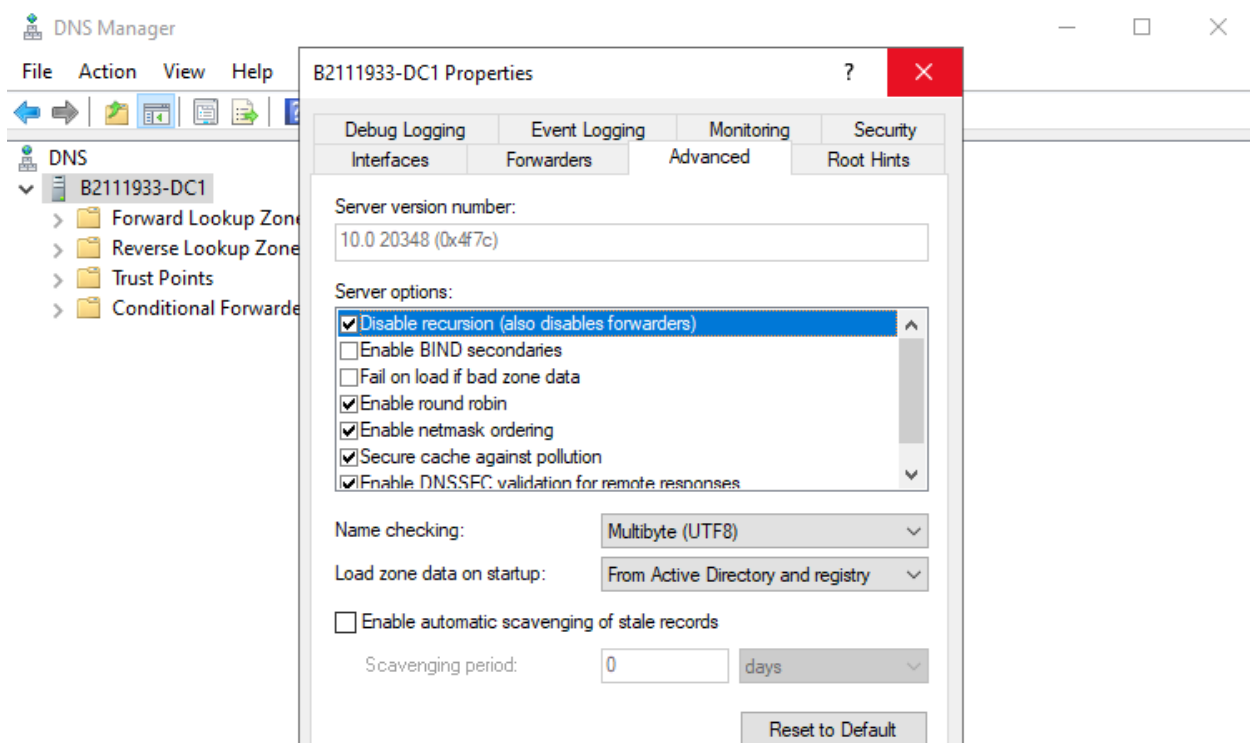

Add the IP Address of DC2 as forwarder
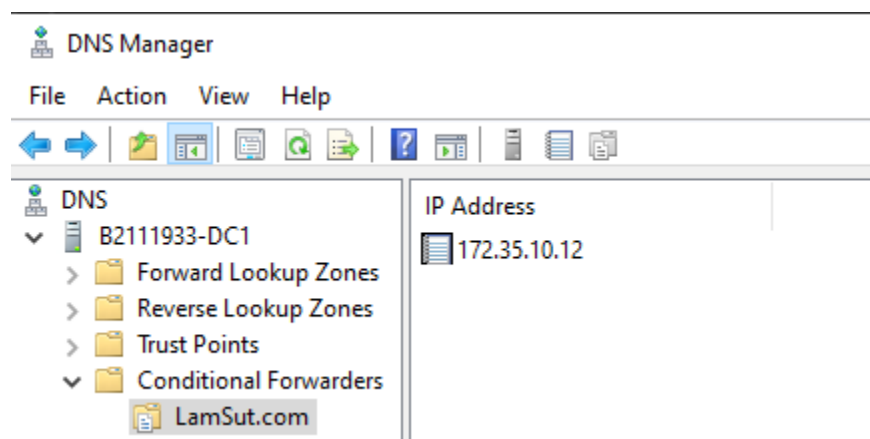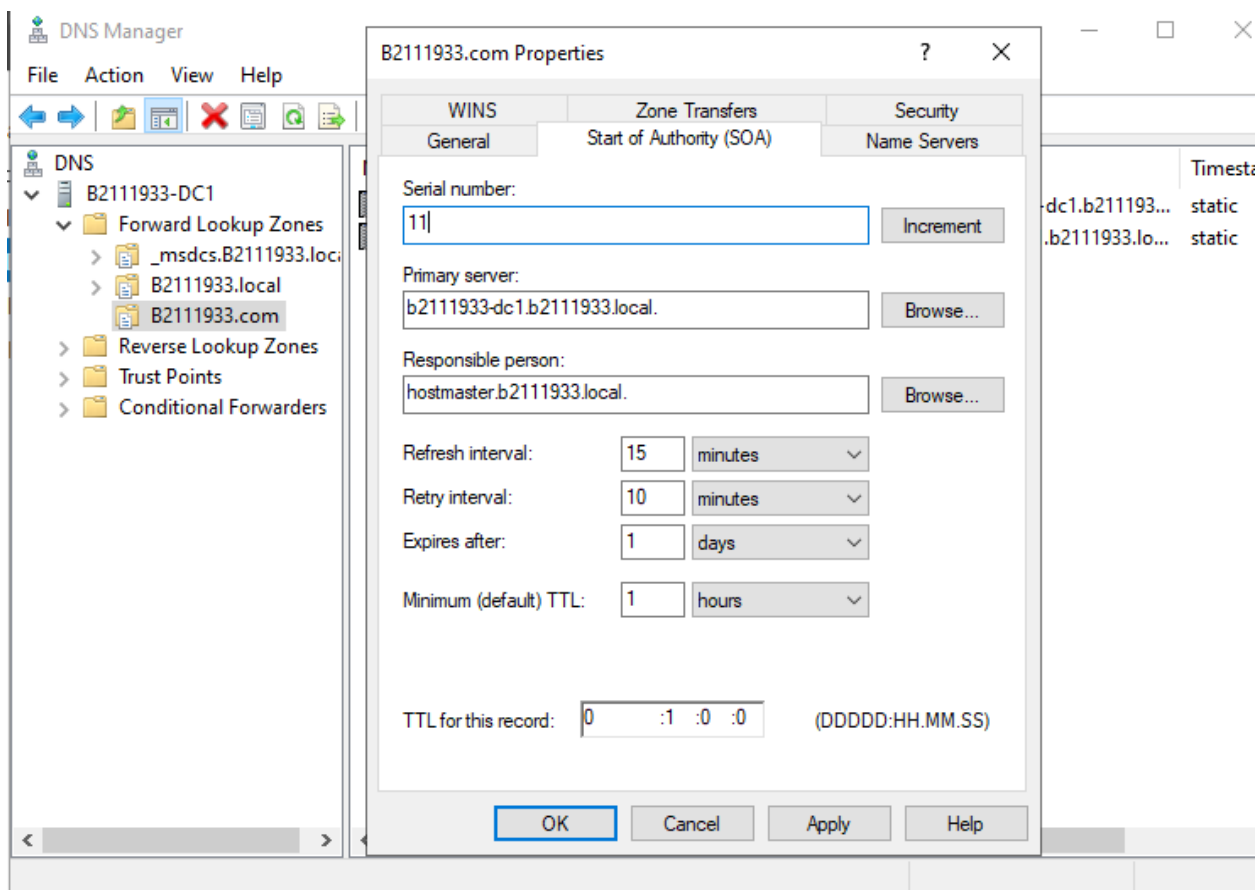

Configure conditional forwarding
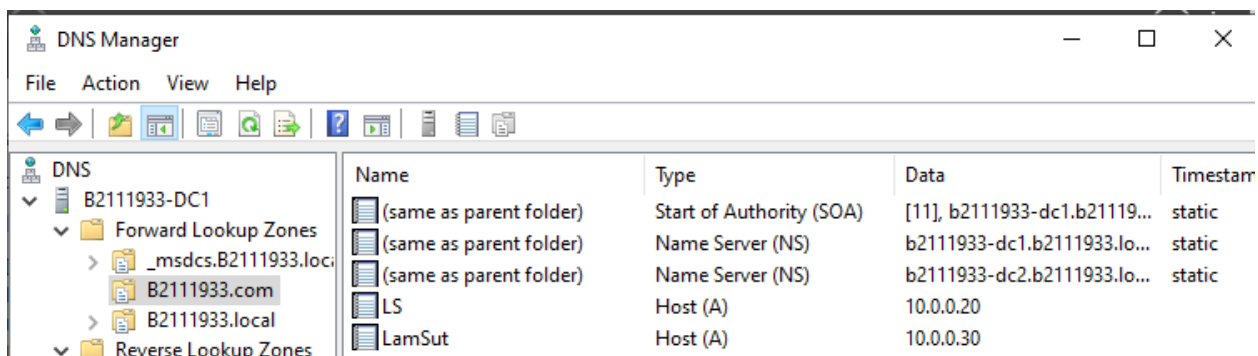
Edit root hints

Disable recursion in DNS can enhance the security aspect
(limit the potential for our DNS server to be used for malicious activities like DDoS attacks).

EXERCISE 7: CREATE AND CONFIGURE DNS ZONES AND RECORDS

Create a primary zone and reconfigure the SOA record

EXERCISE 8. CREATING DNS RESOURCE RECORDS

Create DNS resource records

Challenges: Configure the DNS server to perform reverse name resolutions for all of the resource records you created in previous exercise. List the basic tasks you performed to complete the challenge and then take a screen shot of the DNS Manager console.

Create a reverse lookup zone

It will perform reverse name resolutions for all of the resource records we have created