BATCH : 146 - 149

LESSON : **Windows Server**

DATE : 21.07.2023

SUBJECT : **DNS - DHCP**

ZOOM GİRİŞLERİNİZİ LÜTFEN **LMS** SİSTEMİ ÜZERİNDEN YAPINIZ

Windows Server Day 5

- **Bugünkü dersin pre-class materyalini incelediniz mi?**

Previously

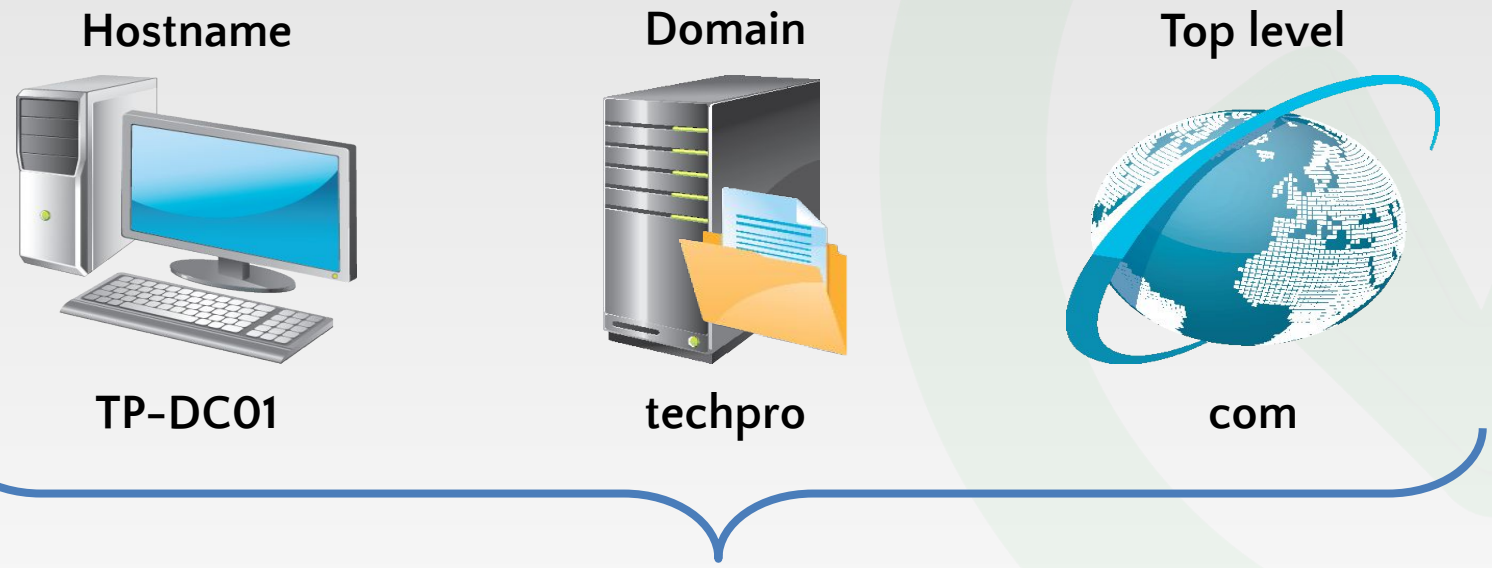
- Setting up another Server on domain
- File Server
- Sharing - File management
- IIS Server

Contents

- DNS
- DHCP

Domain name, hostname, FQDN

A *hostname* is a computer name that is added to a domain name and top level domain to make a fully qualified domain name (FQDN)



Fully qualified domain name = TP-DC01.techpro.com

What Is DNS?

- Humans can not remember numbers easily.
- IP addresses are made up of numbers. 201.128.15.227

DNS is used to:

- **Resolve host names to IP addresses**
- **Locate domain controllers** and global catalog servers
- **Resolve IP addresses to host names**
- **Locate mail servers** during email delivery

DNS Zones and Records

A DNS zone is a specific portion of DNS namespace that contains DNS records

Zone types:

- **Forward lookup** zone
- **Reverse lookup** zone

Resource records in forward lookup zones include:

- **A**, MX, SRV, **NS**, **SOA**, and **CNAME**,TXT

Resource records in reverse lookup zones include:

- **PTR**

DNS Records

Record Types

SOA (Start of Authority)

- every zone has SOA, contains **information about DNS server**

NS (Name Server)

- every zone has NS, indicates zone **authoritative DNS server**

A (Address)

- **maps a domain name to an IP address**
- tp-dc01.techpro.com > 192.168.0.200

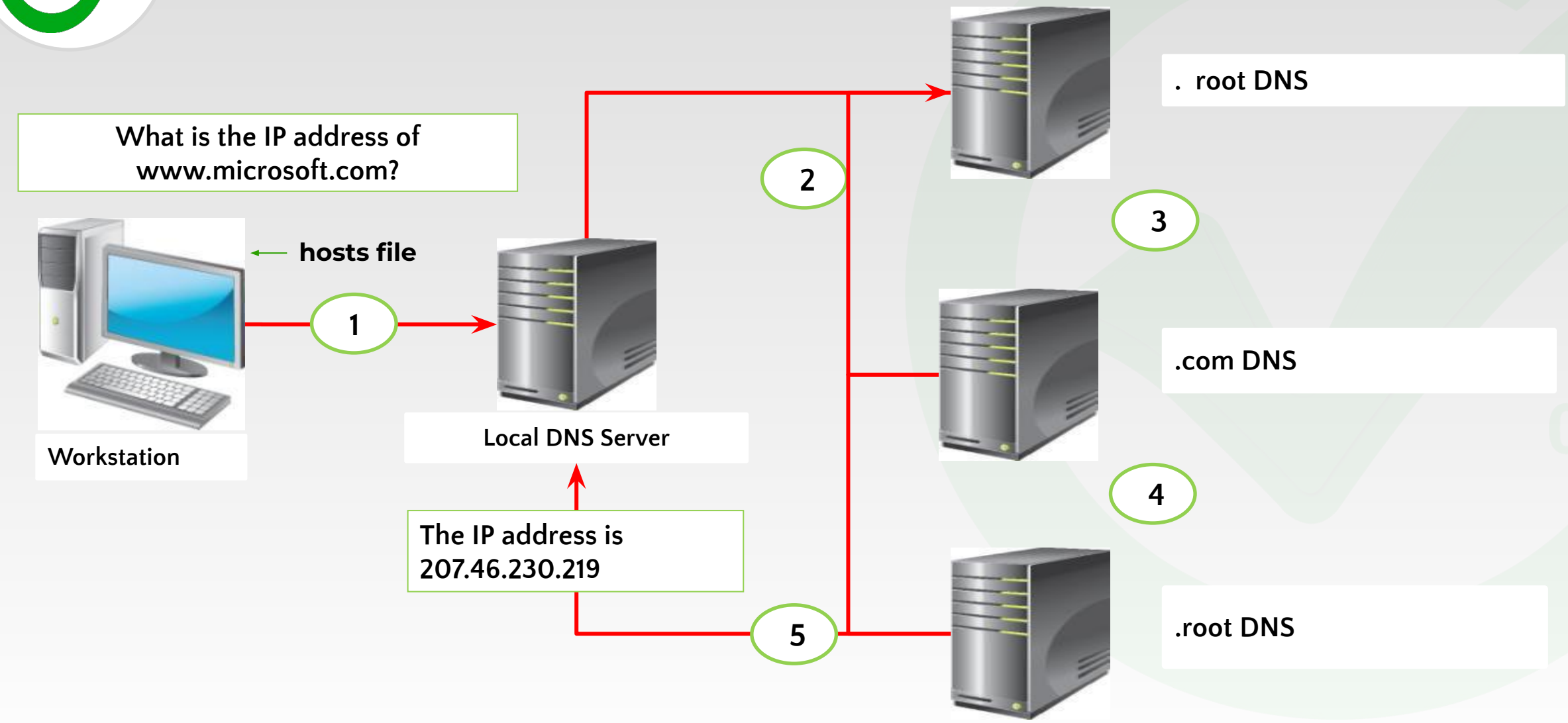
CNAME (Canonical Name)

- creates an **alias for a domain**
- fileserver.techpro.com > fs01.techpro.com

PTR (Pointer)

- **maps an IP address to a domain**
- 192.168.0.201 > fs01.techpro.com

How Internet DNS Names Are Resolved



Link-local Multicast Name Resolution

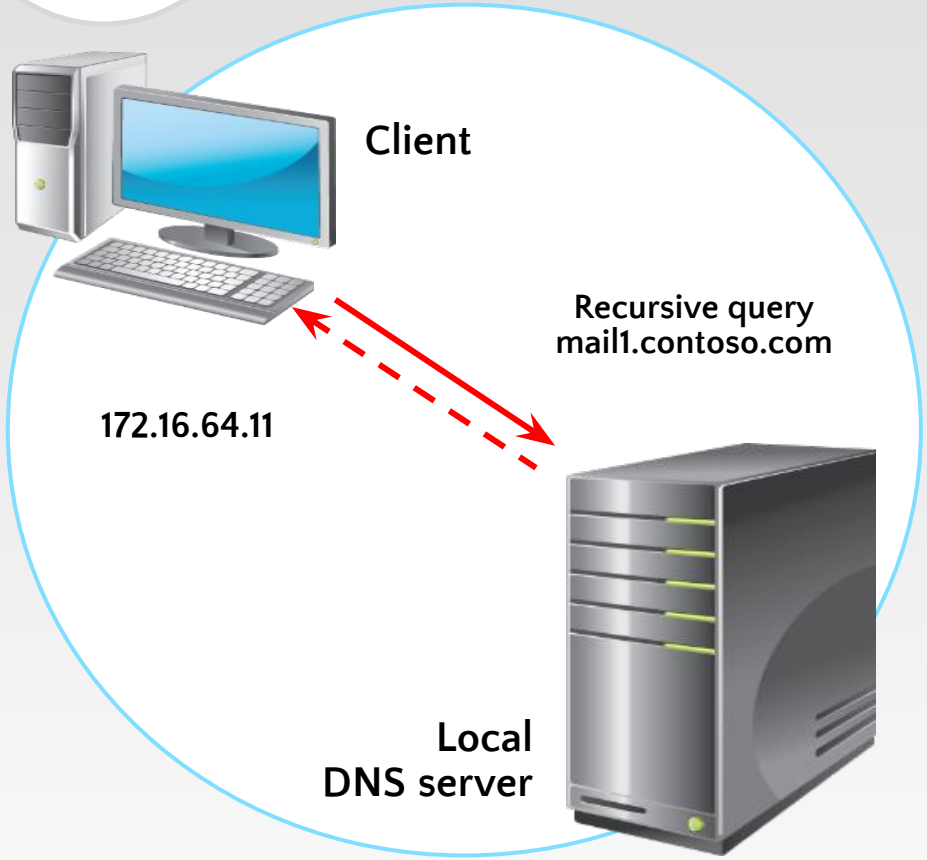
LLMNR is an additional method for name resolution that does not use DNS or WINS

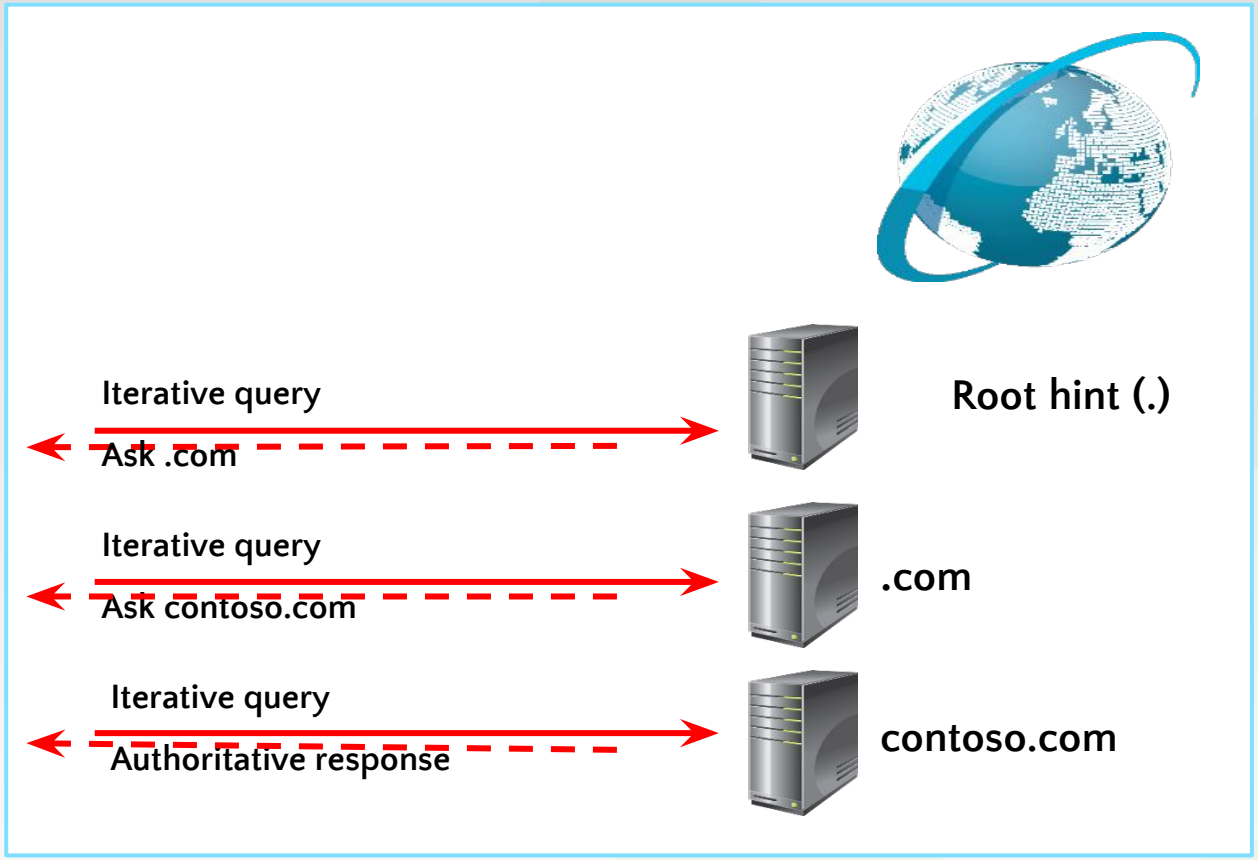
- LLMNR is designed **for IPv6**
- Works only on Windows Vista, Windows Server 2008, and all newer Windows operating systems
- Network Discovery must be enabled
- Can be controlled via Group Policy
- Not advised to be used on domain

What Are DNS Queries?

A *recursive query* is sent to a DNS server and requires a complete answer

What Are DNS Queries?





Install the DNS Server Role

DNS server installation methods:

- Server Manager
- Active Directory Domain Services Installation Wizard

Tools available to manage DNS Server:

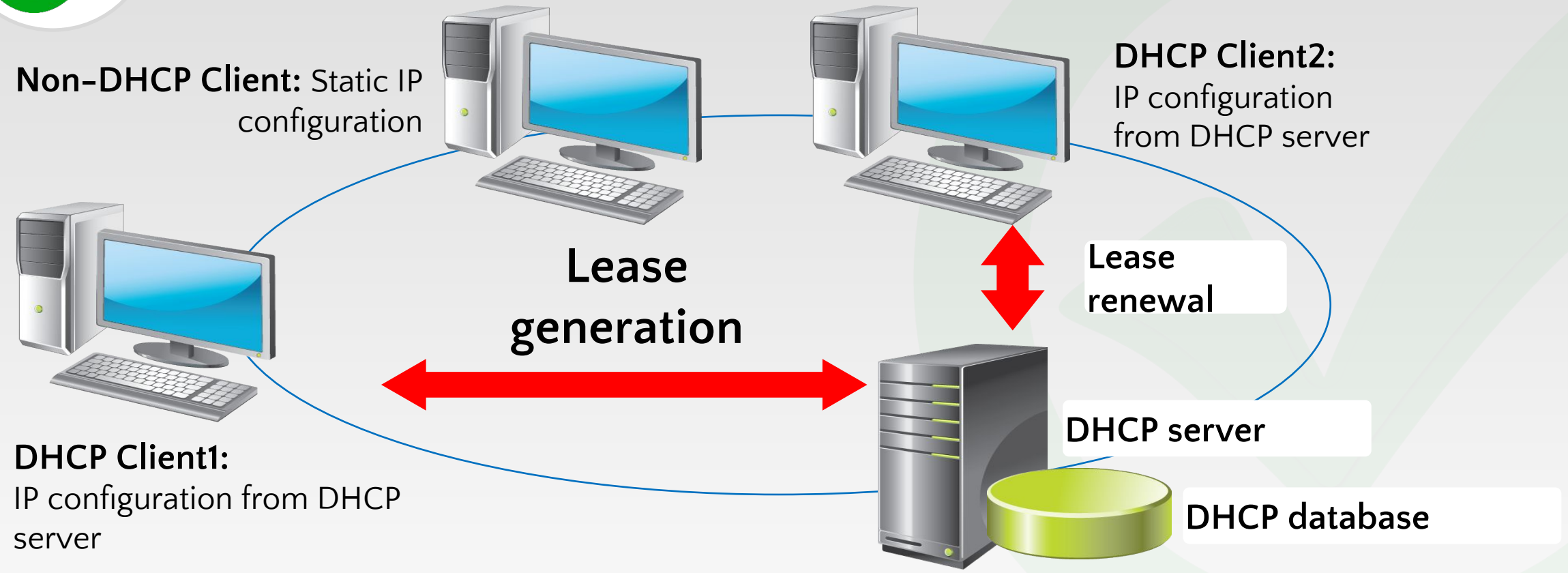
- DNS Manager snap-in
  - Server Manager
  - DNS Manager console (dnsmgmt.msc)
- DNSCmd command-line tool
- Windows Powershell
- Remote Server Administrative Tools

Using DHCP

DHCP reduces the complexity and amount of administrative work by using automatic IP configuration

Automatic IP Configuration	Manual IP Configuration
IP addresses are supplied automatically	IP addresses are entered manually
Correct configuration information is ensured	IP address could be entered incorrectly
Client configuration is updated automatically	Communication and network issues can result
A common source of network problems is eliminated	Frequent computer moves increase administrative effort

How DHCP Allocates IP Addresses

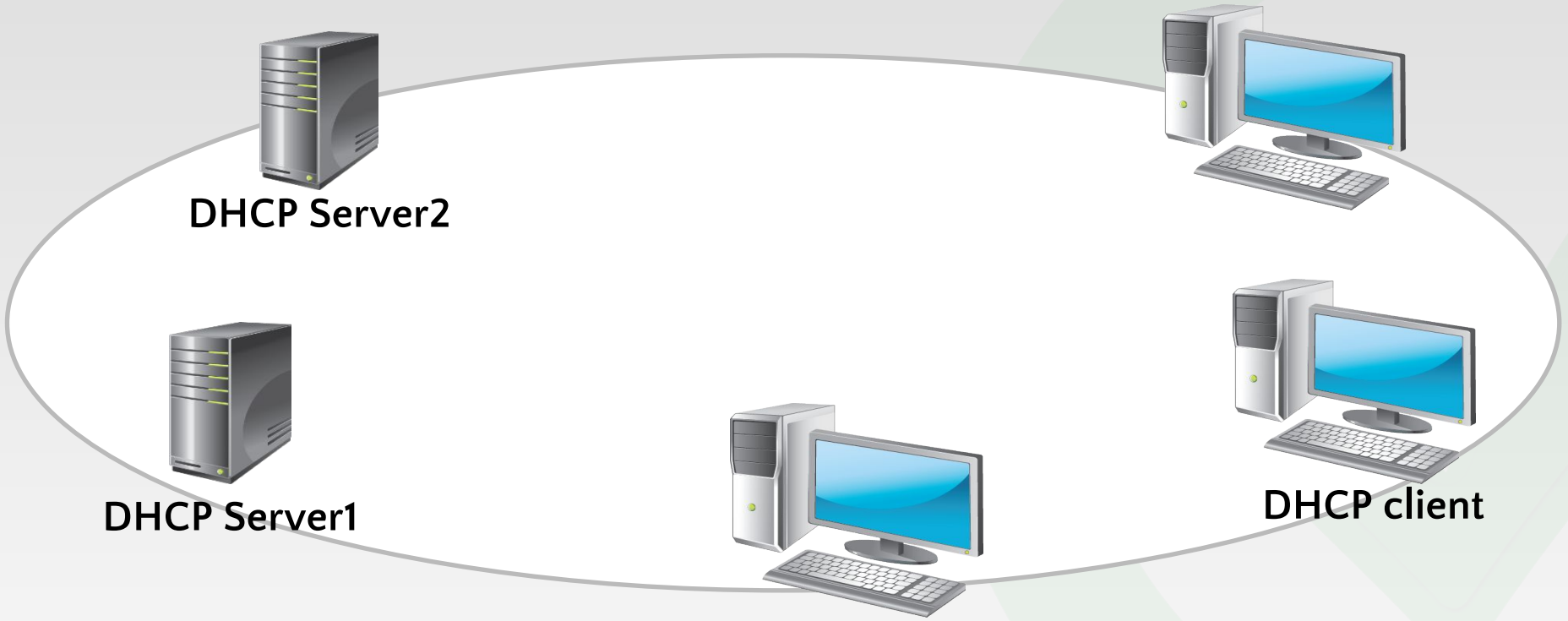


IP Address1: Leased to DHCP Client1

IP Address2: Leased to DHCP Client2

IP Address3: Available for lease

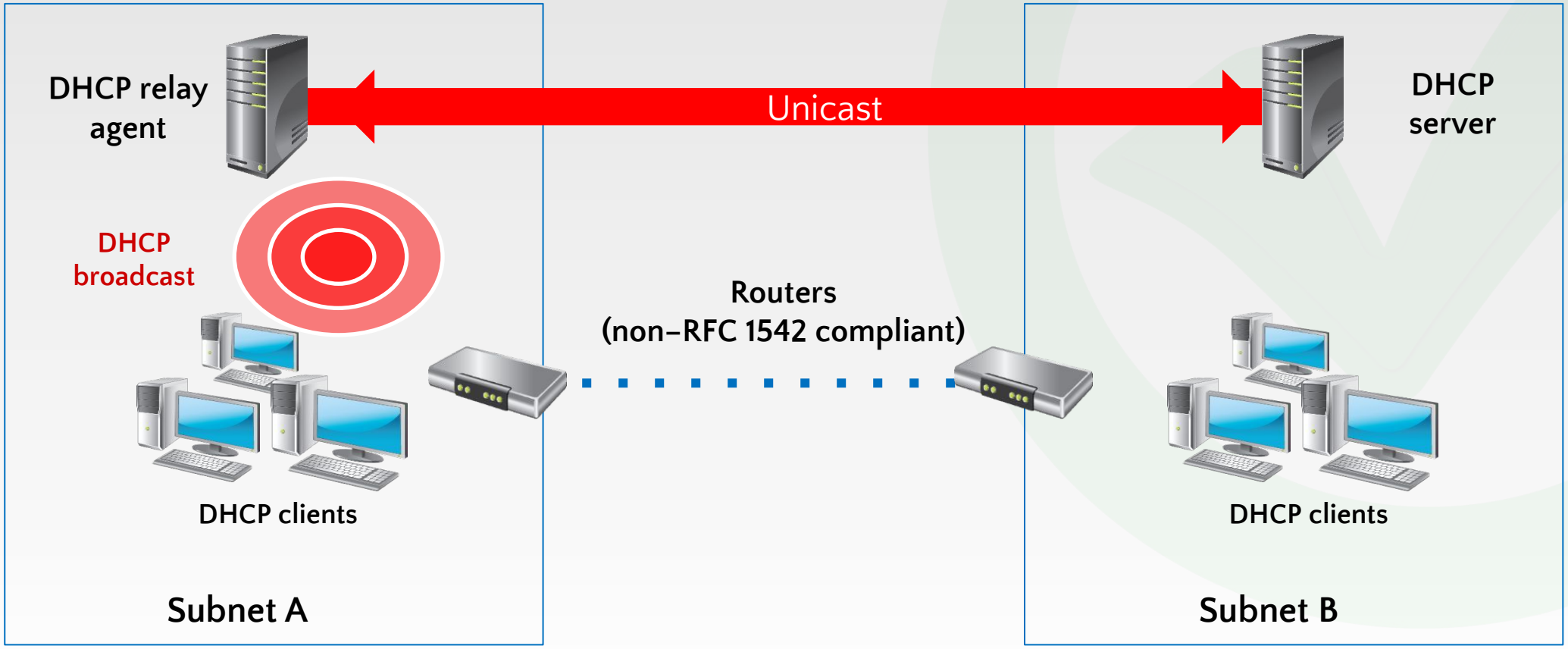
DHCP Lease Generation



1. DHCP client broadcasts a DHCPDISCOVER packet
2. DHCP servers broadcast a DHCPOFFER packet
3. DHCP client broadcasts a DHCPREQUEST packet
4. DHCP Server1 broadcasts a DHCPACK packet

DHCP Relay Agent

A DHCP relay agent listens for DHCP broadcasts from DHCP clients and then relays them to DHCP servers in different subnets



Configuring DHCP Scopes

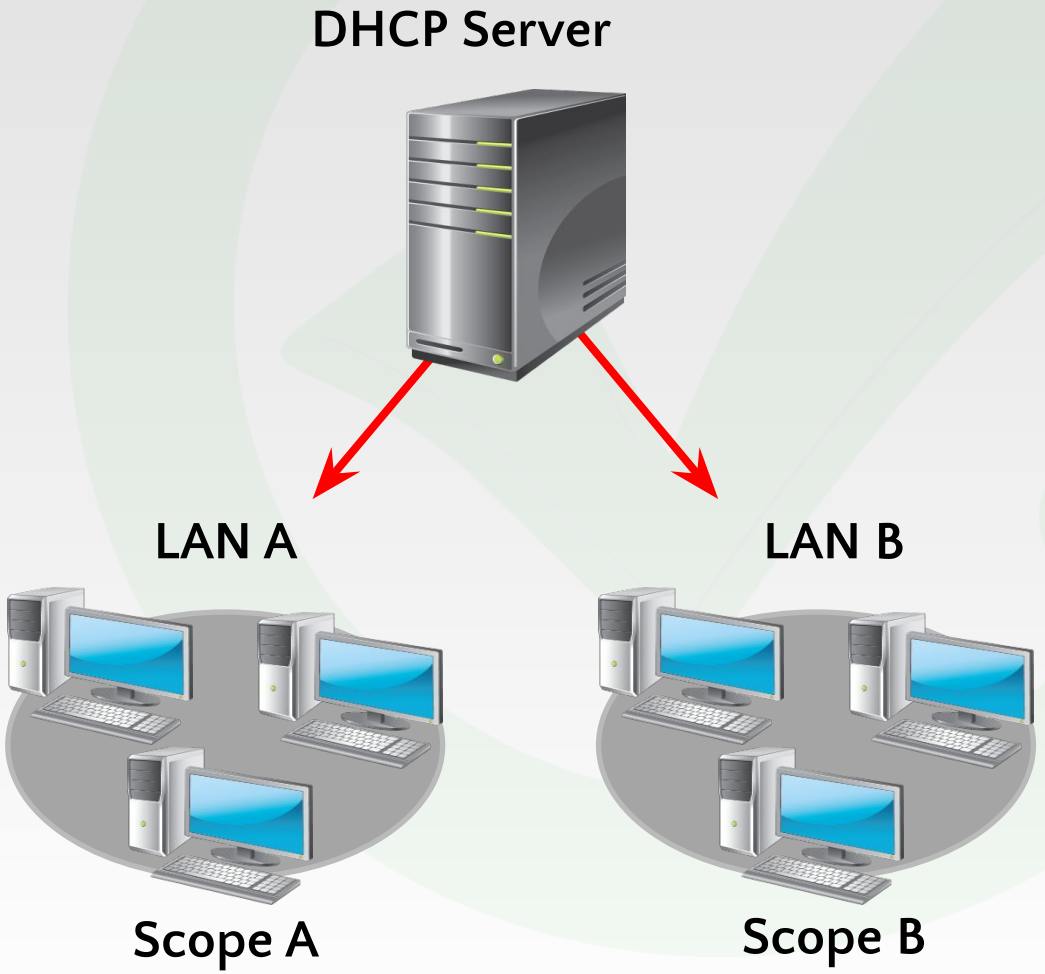
What Are DHCP Scopes?
What Is a DHCP Reservation?
What Are DHCP Options?
How DHCP Applies Options
Demonstration: Creating and Configuring a DHCP Scope

What Are DHCP Scopes?

A *DHCP scope* is a range of IP addresses that are available to be leased

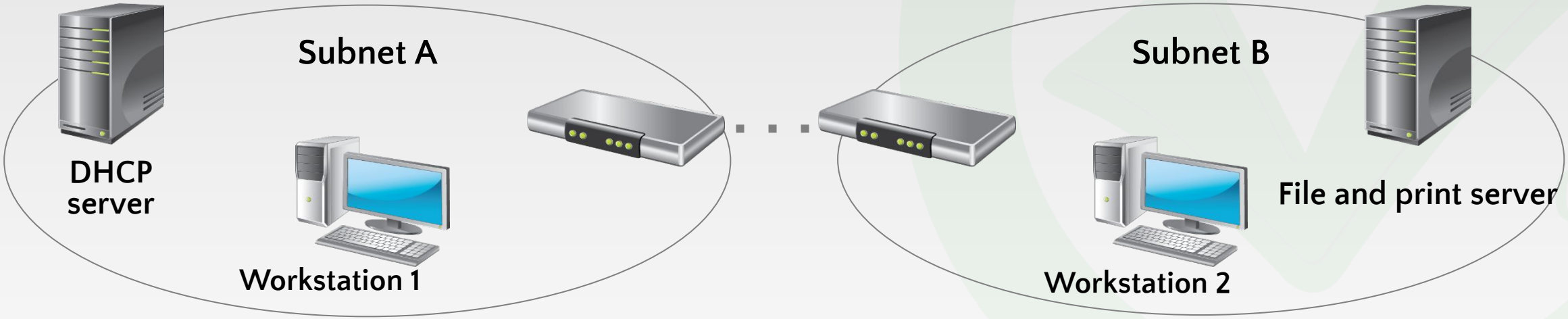
DHCP scope properties include:

- Network ID
- **Lease duration**
- Scope name
- **Subnet mask**
- Network **IP address range**
- **Exclusion range**



DHCP Reservation

A DHCP reservation occurs when an IP address within a scope is set aside for use with a specific DHCP client



IP Address1: Leased to Workstation 1

IP Address2: Leased to Workstation 2

IP Address3: Reserved for file and print server

What Are DHCP Options?

DHCP options:

- Are values for common configuration data
- Apply to the server, scopes, reservations, and class options

Common scope options are:

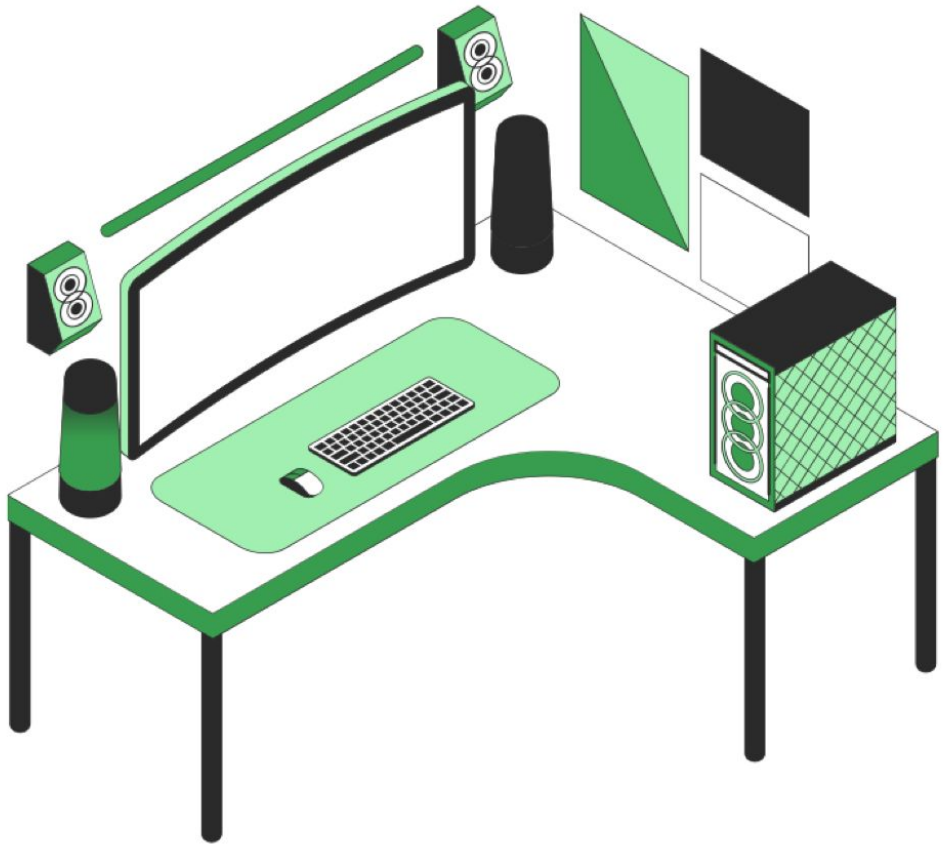
- Router (**Default Gateway**)
- **DNS** Name
- DNS Servers
- WINS Servers

How DHCP Applies Options

You can apply DHCP options at various levels:

- Server
- Scope
- Class
- Reserved client

Typically, you do not apply the class or reserved client options



Do you have any questions?

Send it to us! We hope you learned something new.