**MCSA ASSIGNMENT**

**Module: 2**

**Installing and configure DNS server**

1. [The Domain Name System (DNS) is a hierarchical and decentralized naming system for computers, services, or other resources connected to the Internet or a private network](https://www.bing.com/ck/a?!&&p=2f813715a2210cc5JmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTgyOA&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=Describe+DNS+operation&u=a1aHR0cHM6Ly9lbi53aWtpcGVkaWEub3JnL3dpa2kvRG9tYWluX05hbWVfU3lzdGVt&ntb=1). [It associates various information with domain names assigned to each of the participating entities](https://www.bing.com/ck/a?!&&p=660fbd23857139daJmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTgzMA&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=Describe+DNS+operation&u=a1aHR0cHM6Ly9lbi53aWtpcGVkaWEub3JnL3dpa2kvRG9tYWluX05hbWVfU3lzdGVt&ntb=1). [DNS translates domain names to IP addresses so browsers can load Internet resources](https://www.bing.com/ck/a?!&&p=bd6d35098ad4bbd9JmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTgzMg&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=Describe+DNS+operation&u=a1aHR0cHM6Ly93d3cuY2xvdWRmbGFyZS5jb20vbGVhcm5pbmcvZG5zL3doYXQtaXMtZG5zLw&ntb=1).
2. [In a recursive DNS query, the DNS server communicates with several other DNS servers to hunt down an IP address and return it to the client](https://www.bing.com/ck/a?!&&p=3694d0f0328de115JmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTgzNQ&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=DNS+query%e2%80%94Iterative+and+Recursive+%ef%82%b7&u=a1aHR0cHM6Ly93d3cuY2xvdWRmbGFyZS5jb20vbGVhcm5pbmcvZG5zL3doYXQtaXMtcmVjdXJzaXZlLWRucy8&ntb=1).

[In an iterative DNS query, the client communicates directly with each DNS server involved in the lookup, and the DNS server provides the best answer it has](https://www.bing.com/ck/a?!&&p=b4ebcbf96dbe08a5JmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTgzNw&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=DNS+query%e2%80%94Iterative+and+Recursive+%ef%82%b7&u=a1aHR0cHM6Ly93d3cub21uaXNlY3UuY29tL3RjcGlwL3JlY3Vyc2l2ZS1hbmQtaXRlcmF0aXZlLWRucy1xdWVyaWVzLnBocA&ntb=1).

1. [A Forward Lookup Zone in DNS is where domain names are mapped to IP addresses. When a DNS query is made for a domain name, the DNS server checks the Forward Lookup Zone to find the corresponding IP address](https://www.bing.com/ck/a?!&&p=1d23c08c6d3bac3eJmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTc3Ng&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=what+is+forward+lookup+zone+and+its+resource+type&u=a1aHR0cHM6Ly93d3cubXVzdGJlZ2Vlay5jb20vdW5kZXJzdGFuZGluZy1mb3J3YXJkLWFuZC1yZXZlcnNlLWxvb2t1cC16b25lcy1pbi1kbnMv&ntb=1). This is the most common type of DNS lookup, allowing users to access websites and other resources using human-readable domain names rather than numerical IP addresses.
2. A reverse lookup zone is an authoritative DNS zone that is used primarily to resolve IP addresses to network resource names. This zone type can be primary, secondary, or Active Directory—integrated. Reverse lookups traverse the DNS hierarchy in exactly the same way as the more common forward lookups.
3. [A conditional forwarder is a DNS server that forwards queries for a specific domain name](https://www.bing.com/ck/a?!&&p=958f695a60514af5JmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTgyMw&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=what+is+conditional+forwarder&u=a1aHR0cHM6Ly9ibHVlY2F0bmV0d29ya3MuY29tL2Jsb2cvZ2V0LWEtaGFuZGxlLW9uLXlvdXItZG5zLWNvbmRpdGlvbmFsLWZvcndhcmRlci1ydWxlcy8&ntb=1).
4. Primary Zone

This is the main zone and has a read/write copy of the zone data. All changes to the zone are made in the primary zone and are replicated to the secondary zones.

The zone data is stored in a text file located in this folder c:\windows\system32\DNS on the Windows server running DNS.

**Secondary Zone**

A secondary Zone is a read-only copy of the primary zone. This zone cannot process updates and can only retrieve updates from the primary zone.  This zone can answer DNS name resolution queries from clients nodes, this helps reduce the workload on the primary zone. Secondary zones cannot be active directory integrated.

**Stub Zone**

Stub zones are like a secondary zone but only stores partial zone data. These zones are useful to help reduce zone transfers by passing the requests to authoritative servers. These zones only contain the SOA, NS, and A records.

1. Active Directory Integrated Zones stores its zone data in Active Directory. Integrated zones can be replicated to all domain controllers in the domain and forest. Active Directory integrated zones use multi-master replication, which means any domain controller running the DNS server service can write updates to the zone for which they are authoritative.
2. A primary server reads its zone files from files on the system’s disk. These are usually where the zone administrator adds, edits, or transfers the original zone files.

The secondary server receives the zones that it is authoritative for through a zone transfer from one of the primary servers for the zone.

1. Aging and Scavenging is a DNS server service which supports a mechanism for performing clean-up and removal of stale resource records which can accumulate in zone data over time. It helps to maintain the dynamic DNS environment by regular deletion of stale resource records from the DNS database.
2. [An MX-record, or Mail eXchange-record, is a type of resource record in the Domain Name System (DNS) that specifies the host name of the computer(s) that handle emails for a domain and a prioritiz](https://www.bing.com/ck/a?!&&p=6c3733741830230aJmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTg4OQ&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=what+is+MX+record&u=a1aHR0cHM6Ly93d3cuY29wZXJuaWNhLmNvbS9lbi9ibG9nL3Bvc3QvYS1yZWNvcmQtYW5kLW14LXJlY29yZC1ob3ctZG9lcy1pdC13b3Jr&ntb=1)ation code.

**DHCP**

1. Internet Service Providers (ISP) use DHCP to assign IP addresses to their users.

DHCP reduces the occurrence of IP conflict to the barest minimum. ...

DHCP also provides support and easy transition for devices still using the BOOTP standard, which was in place before the Dynamic Host Configuration Protocol.

1. [DORA is the process used by DHCP (Dynamic Host Configuration Protocol) to provide an IP address to hosts or client machines](https://www.bing.com/ck/a?!&&p=515c6e7c365b5d73JmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTc5MA&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=What+is+DORA+process%3f&u=a1aHR0cHM6Ly93d3cuZ2Vla3Nmb3JnZWVrcy5vcmcvaG93LWRvcmEtd29ya3Mv&ntb=1). [DORA is a sequence of messages that includes Discover, Offer, Request, and Acknowledge](https://www.bing.com/ck/a?!&&p=d6f019b57d13aabaJmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTc5NA&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=What+is+DORA+process%3f&u=a1aHR0cHM6Ly93d3cuZ25zM25ldHdvcmsuY29tL3doYXQtaXMtZG9yYS1wcm9jZXNzLWluLWRoY3Av&ntb=1). [The process follows some steps between the server and client, and it gets the IP address from the centralized server](https://www.bing.com/ck/a?!&&p=764e296525336eafJmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTc5Ng&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=What+is+DORA+process%3f&u=a1aHR0cHM6Ly93d3cuZ2Vla3Nmb3JnZWVrcy5vcmcvaG93LWRvcmEtd29ya3Mv&ntb=1). [All messages broadcast at the network layer](https://www.bing.com/ck/a?!&&p=552b4d57329f900fJmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTc5OQ&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=What+is+DORA+process%3f&u=a1aHR0cHM6Ly93d3cuZ25zM25ldHdvcmsuY29tL3doYXQtaXMtZG9yYS1wcm9jZXNzLWluLWRoY3Av&ntb=1).
2. [A DHCP server is authorized by default if it is installed on a Domain Controller](https://www.bing.com/ck/a?!&&p=d0ae3c0e8ab40fddJmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTc3OQ&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=What+is+authorized+DHCP+server%3f&u=a1aHR0cHM6Ly93d3cuZHRvbmlhcy5jb20vYXV0aG9yaXplLWRoY3Atc2VydmVyLTIwMTYv&ntb=1). [To authorize or unauthorize a DHCP Server, you must use a user account that is a member of the Enterprise Admins security group or an account with delegated permissions for that domain](https://www.bing.com/ck/a?!&&p=56bfbdd675ee471cJmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTc4MQ&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=What+is+authorized+DHCP+server%3f&u=a1aHR0cHM6Ly93d3cuZHRvbmlhcy5jb20vYXV0aG9yaXplLWRoY3Atc2VydmVyLTIwMTYv&ntb=1).
3. **DHCP scope** is a defined range of IP addresses that a DHCP server can dynamically assign to client devices on a network

On the Lease Duration window, we can specify how long we want the DHCP lease to last. The lease is how long the client can keep the TCP/IP settings before it needs to come back to the DHCP Server for a new lease or configuration.

On the Configure DHCP Options window, we have the ability to configure the Default Gateway, DNS Server, and WINS Server settings for the DHCP Scope.

1. [A DHCP relay agent is a device that forwards DHCP messages between clients and servers on different networks](https://www.bing.com/ck/a?!&&p=5b7bce246c107251JmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTcxMQ&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=What+is+dhcp+relay+agent%3f&u=a1aHR0cHM6Ly93d3cuY2lzY28uY29tL2VuL1VTL2RvY3MvaW9zLzEyXzR0L2lwX2FkZHIvY29uZmlndXJhdGlvbi9ndWlkZS9odGRoY3ByZS5odG1s&ntb=1). [It helps clients obtain IP addresses from a DHCP server that is not on the same subnet](https://www.bing.com/ck/a?!&&p=78373f086b5976ddJmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTcxNA&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=What+is+dhcp+relay+agent%3f&u=a1aHR0cHM6Ly93d3cuY2lzY28uY29tL2MvZW4vdXMvdGQvZG9jcy9pb3MteG1sL2lvcy9pcGFkZHJfZGhjcC9jb25maWd1cmF0aW9uLzE1LXN5L2RoY3AtMTUtc3ktYm9vay9kaGNwLXJlbGF5LWFnZW50Lmh0bWw&ntb=1).
2. IPCONFIG stands for Internet Protocol Configuration. This is a command-line application which displays all the current TCP/IP (Transmission Control Protocol/Internet Protocol) network configuration, refreshes the DHCP (Dynamic Host Configuration Protocol) and DNS (Domain Name Server).

**IPAM**

1. IP Address Management (IPAM) is a method used to plan, track and manage information associated with a network’s Internet Protocol address space. Using [IPAM software](https://efficientip.com/products/solidserver-ddi/), administrators can make sure the repository of assignable IP addresses stays up-to-date.
2. [**Here are some reasons why you may need a dedicated server**](https://www.bing.com/ck/a?!&&p=d92b950d07ea5bc1JmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTc3Ng&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=why+need+dedicated+server&u=a1aHR0cHM6Ly93d3cudGhlZW5naW5lZXJpbmdwcm9qZWN0cy5jb20vMjAyMS8wOC9kby15b3UtbmVlZC1hLWRlZGljYXRlZC1zZXJ2ZXIuaHRtbA&ntb=1):

Your website is growing and needs to be able to handle an increase in traffic.

Security is a concern for your website.

You’d like your page loading times to be as optimal as possible.

You want to have control over every aspect of your server.

You want faster loading times for your website.

1. Automatic IP address infrastructure discovery

Highly customizable IP address space display, reporting, and management

Configuration change auditing for DHCP and IPAM services

Monitoring and management of DHCP and DNS services

IP address lease tracking

**Remote connectivity and VPN**

1. VPN stands for "Virtual Private Network" and describes the opportunity to establish a protected network connection when using public networks. VPNs encrypt your internet traffic and disguise your online identity. This makes it more difficult for third parties to track your activities online and steal data. The encryption takes place in real time.

### SSL VPN

### Site-to-site VPN

### Client-to-Server VPN

### A tunneling protocol is a [communication protocol](https://en.wikipedia.org/wiki/Communication_protocol) which allows for the movement of data from one network to another.

### An authentication protocol is a type of computer [communications protocol](https://en.wikipedia.org/wiki/Communications_protocol) or [cryptographic protocol](https://en.wikipedia.org/wiki/Cryptographic_protocol) specifically designed for transfer of [authentication](https://en.wikipedia.org/wiki/Authentication) data between two entities.

1. Routing refers to the **process of directing a data packet from one node to another.**

**Network policy server**

1. [A RADIUS Server is a client-server networking protocol that facilitates communication between a central server and individual users who want to g](https://www.bing.com/ck/a?!&&p=d0fcbe075ae23b01JmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTg0Nw&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=what+is+Radius+server&u=a1aHR0cHM6Ly93d3cuc2VydmVyd2F0Y2guY29tL25ldHdvcmtpbmcvcmFkaXVzLXNlcnZlci8&ntb=1)ain access to the server.
2. Authentication, Authorization, and Accounting (AAA) is an architectural framework to gain access to computer resources, enforcing policies, auditing usage, to provide essential information required for billing of services and other processes essential for network management and security.
3. Using information from its user database, the **RADIUS server** creates its own response and compares that to the response from the client. When the RADIUS server authenticates the client, the process repeats in reverse, and the client authenticates the RADIUS server.
4. [The port number for RADIUS is 1812](https://www.bing.com/ck/a?!&&p=07fe84c5e8000b22JmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTc1OA&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=RADIUS+port+number&u=a1aHR0cHM6Ly93d3cuY2lzY28uY29tL2MvZW4vdXMvc3VwcG9ydC9kb2NzL3NlY3VyaXR5LXZwbi9yZW1vdGUtYXV0aGVudGljYXRpb24tZGlhbC11c2VyLXNlcnZpY2UtcmFkaXVzLzEyNDMzLTMyLmh0bWw&ntb=1) .
5. Network policies: NPS **allows administrators to define and implement network policies that control access to network resources**. These policies can be tailored to meet specific security needs and organizational protocols, providing a flexible yet secure network environment.

**IPv4 addressing and IPv6 addressing**

1. An **IP address** (short for **Internet Protocol address**) is a numerical label assigned to a device connected to a computer network that uses the Internet Protocol for communication

**Types of IP Addresses**:

* 1. **Public IP Address**: Used for devices connected to the internet. It’s the address we see on websites and allows communication with external servers.
  2. **Private IP Address**: Used within local networks (e.g., home networks). Devices within the same network share private IP addresses.
  3. **Static IP Address**: Remains fixed and doesn’t change. Useful for servers or devices that need consistent addressing.
  4. **Dynamic IP Address**: Assigned dynamically by a network’s DHCP server. Changes periodically, making it suitable for most devices.

1. In the IPv4 IP address space, there are five classes: A, B, C, D and E.
2. [Public IP address identifies you to the wider internet so that all the information you’re searching for can find you](https://www.bing.com/ck/a?!&&p=50db5c51d33f84b8JmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTg1Mw&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=public+ip+address+and+private+ip+address&u=a1aHR0cHM6Ly93d3cuYXZhc3QuY29tL2MtaXAtYWRkcmVzcy1wdWJsaWMtdnMtcHJpdmF0ZQ&ntb=1). [It can be reached via the Internet from any computer in the world](https://www.bing.com/ck/a?!&&p=e0cdcea53798c3edJmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTg1Nw&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=public+ip+address+and+private+ip+address&u=a1aHR0cHM6Ly93aWtpLnRlbHRvbmlrYS1uZXR3b3Jrcy5jb20vdmlldy9Qcml2YXRlX2FuZF9QdWJsaWNfSVBfQWRkcmVzc2Vz&ntb=1) [Private IP address is used within a private network to connect securely to other devices within that same network](https://www.bing.com/ck/a?!&&p=84e616f972bd53beJmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTg1OQ&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=public+ip+address+and+private+ip+address&u=a1aHR0cHM6Ly93d3cuYXZhc3QuY29tL2MtaXAtYWRkcmVzcy1wdWJsaWMtdnMtcHJpdmF0ZQ&ntb=1). [It is used in a private or LAN network](https://www.bing.com/ck/a?!&&p=5cda2632d937dc45JmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTg2Mg&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=public+ip+address+and+private+ip+address&u=a1aHR0cHM6Ly93d3cuaXB4by5jb20vYmxvZy9wcml2YXRlLXZzLXB1YmxpYy1pcC1hZGRyZXNzLw&ntb=1).
3. NAT stands for network address translation. It’s a way to map multiple private addresses inside a local network to a public IP address before transferring the information onto the internet..
4. A gateway IP address, also known as a **default gateway**, is an IP address that serves as an access point or “gateway” to other networks.
5. [A loopback address is a reserved IP address range that starts from 127.0.0.0 and ends at 127.255.25](https://www.bing.com/ck/a?!&&p=9b7f7ac7ad662585JmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTg4MQ&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=What+is+loopback+address%3f&u=a1aHR0cHM6Ly93d3cuZ2Vla3Nmb3JnZWVrcy5vcmcvd2hhdC1pcy1hLWxvb3BiYWNrLWFkZHJlc3Mv&ntb=1)5.255.

7. [The types of IPv6 addresses are](https://www.bing.com/ck/a?!&&p=2877246648403c47JmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTgyNA&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=different+type+of+ipv6+address&u=a1aHR0cHM6Ly9zdHVkeS1jY25hLmNvbS90eXBlcy1vZi1pcHY2LWFkZHJlc3Nlcy8&ntb=1):

* Unicast – represents a single interface or a group of interfaces that share the same address. Packets addressed to a unicast address are delivered to one host. There are several types of unicast addresses, such as global, unique local, and link local.
* Anycast – identifies one or more interfaces that support the same function. Packets addressed to an anycast address are delivered to the nearest or best host.
* Multicast – represents a dynamic group of hosts that are interested in the same traffic. Packets addressed to a multicast address are delivered to all hosts in the group. There are three types of multicast addresses, such as permanent, transient, and solicited-node.

**DFS**

* 1. A **Distributed File System (DFS)**as the name suggests, is a file system that is distributed on multiple file servers or multiple locations. It allows programs to access or store isolated files as they do with the local ones, allowing programmers to access files from any network or computer.
  2. [DFS Namespaces and DFS Replication are role services in the File and Storage Services role in Windows Server](https://www.bing.com/ck/a?!&&p=dc525e97aa44f5c3JmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTgwNQ&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=Define+DFS+namespace+and+DFS+replication&u=a1aHR0cHM6Ly9sZWFybi5taWNyb3NvZnQuY29tL2VuLXVzL3ByZXZpb3VzLXZlcnNpb25zL3dpbmRvd3MvaXQtcHJvL3dpbmRvd3Mtc2VydmVyLTIwMTItcjItYW5kLTIwMTIvamoxMjcyNTAodj13cy4xMSk&ntb=1). [DFS Namespaces allows you to group shared folders on different servers into one or more logical namespaces](https://www.bing.com/ck/a?!&&p=9ba4ed5ce695f0b6JmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTgwOA&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=Define+DFS+namespace+and+DFS+replication&u=a1aHR0cHM6Ly9sZWFybi5taWNyb3NvZnQuY29tL2VuLXVzL3ByZXZpb3VzLXZlcnNpb25zL3dpbmRvd3MvaXQtcHJvL3dpbmRvd3Mtc2VydmVyLTIwMTItcjItYW5kLTIwMTIvamoxMjcyNTAodj13cy4xMSk&ntb=1). [DFS Replication enables you to efficiently replicate folders across multiple servers and sites](https://www.bing.com/ck/a?!&&p=4376fdd40a114988JmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTgxMQ&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=Define+DFS+namespace+and+DFS+replication&u=a1aHR0cHM6Ly9sZWFybi5taWNyb3NvZnQuY29tL2VuLXVzL3dpbmRvd3Mtc2VydmVyL3N0b3JhZ2UvZGZzLXJlcGxpY2F0aW9uL2Rmc3Itb3ZlcnZpZXc&ntb=1). [These features help to provide highly available resilience and traffic optimized shares](https://www.bing.com/ck/a?!&&p=046bf5a665307738JmltdHM9MTcxMDU0NzIwMCZpZ3VpZD0wZGQ0MjRhNC1lYjYxLTY1NTAtMjU2NS0zN2M0ZWFkMzY0ZmEmaW5zaWQ9NTgxNA&ptn=3&ver=2&hsh=3&fclid=0dd424a4-eb61-6550-2565-37c4ead364fa&psq=Define+DFS+namespace+and+DFS+replication&u=a1aHR0cHM6Ly9hZGFtdGhlYXV0b21hdG9yLmNvbS9kZnMtcmVwbGljYXRpb24v&ntb=1).
  3. A folder target refers to the UNC (Universal Naming Convention) path of a shared folder or another namespace that is linked to a folder within a DFS namespace.

**Advance Network**

1. SDN stands for Software Defined Network which is a networking architecture approach. It enables the control and management of the network using software applications. Through Software Defined Network (SDN) networking behaviour of the entire network and its devices are programmed in a centrally controlled manner through software applications using open APIs.
2. SCVMM is short for**System Centre Virtual Machine Manager**. It’s a part of Microsoft System Centre that contains a set of management features. Compared with the built-in management tools in Windows Server that cannot work alone (need other tools’ support), SCVMM is a more convenient tool because it not only allows you to manage a Hyper-V-only environment, but even hybrid cloud that has both Hyper-V and VMware VMs.