WHITEPAPER

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Creating a Virtual Windows Server environment using VMWare with additions of AD DS, FSRM, DHCP, DNS, and Client virtual machine.

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Executive Summary

This whitepaper gives a deep dive overview of creating a Windows server environment while using VMWare software. This paper explains the setup and how to integrade Active Directory Domain Services (AD DS), File Server Resource Manager (FSRM), Dynamic Host Configuration Protocol (DHCP), and Domain Name System (DNS) into the server. It also explains how to create and configure a Windows client server . This paper will give step instructions, what requirements are needed, and how this will apply in real-world environments.

Introduction

Being able to create a virtual environment has become a great strategy because of its scalability, low cost, and flexible. IT Professional and students can use VMWare to simulate different full network environments using a virtual machine. This whitepaper will give instructions on how to set up a small network with VMWare and Windows server 2022.

System Requirements

**Hardware Requirements:**

1. 16 GB RAM minimum
2. 64-bit Processor
3. 500 GB HDD or SSD

**Software Requirements:**

1. VMWare Workstation Pro
2. Windows Server 2022 ISO
3. Windows 10 (or 11) ISO (For client machine)

Virtual Network Setup

1. Install VMWare Workstation
2. Create Virtual Network (NAT or Host Only)
   * NAT is what allows the virtual machine to access the internet
   * Host only allows only local communication
3. Create the virtual machines:
   * Domain Controller (AD DS, DNS) – Domc25
   * File Server (FSRM) – Fileserv25
   * DHCP Server – Dhcp25
   * Windows 10 Client – Winclient25

Configure Active Directory Domain Services (AD DS)

1. Install the roles of AD DS on Domc25
   * Server manager – Add Roles and Features – AD DS
2. Make into Domain Controller
   * Choose name for the domain (ex. samuel.net)
   * This is also called creating a new forest, or building a network structure for an organization.
   * Create Organizational Units and User Accounts.

Configure DNS

1. AD DS automatically installs DNS
2. Check if Forward Lookup Zones are there
   * DNS Manager (dnsmgmt.msc)
3. Add A and PTR records for the other servers

Configure DHCP

1. Install DHCP Role on Dhcp25
2. Authorize the DHCP server
3. Create the scope for DHCP (ex. 192.168.24.100- 192.168.24.200)

Configure and setup File Server Resource Manager

1. Install FSRM Role on Fileserv25
   * Server Manager - Add Roles and Features - File and Storage Services - File Services - File Server Resource Manager
2. Make a shared folder for client machine(s)
   * Right click - Properties - Sharing tab - Advanced Sharing - Share as Users
   * Configure permissions and rules for users with access

Client Machine Configuration

1. Install Windows 10 or 11
2. Set the DNS server to Domc25 IP address
3. Join the set domain (ex. samuel.net)
4. Login to the domain with set credentials

How it all works together

* AD DS manages computers, users and logins. It provides central authority when it comes to security.
* DNS resolves names into IP addresses in the domain which lets clients locate servers.
* DHCP assigns the IP addresses
* FSRM manages the file storage which makes rules for files and space
* Windows Client uses all and needs all for their machine to work properly

Conclusion

Using VMWare is an important and efficient way to create an environment for testing, education, and just practicing your networking configuration skills. When you add AD DS, DNS, DHCP, and FSRM this can give the user gain experience with making good grade level environments for potential jobs or clients. This also gives students a great undetrstanding for jobs that specialize in networking and support jobs.