Pre-Cloud Windows Server Foundations Project

In this project I will set up my own IT lab using my shop computer. I will be installing and administering a Windows Server network on VirtualBox, a popular and versatile virtualization platform. Virtualization has become a cornerstone of modern IT infrastructure, enabling users to create virtual environments for testing, development, and production purposes. In this project, I will walk you through a step-by-step process of installing a fully functional 180 day trial version of Windows Server 2016 and configuring many of its features and services. I will also install a Windows 10 client machine on VirtualBox.

Prerequisites:

Before jumping into the installation and configuration, I needed to obtain and verify the following prerequisites:

VirtualBox Installed: Download and install Oracle VM VirtualBox from the official website (https://www.virtualbox.org/).

Windows Server 2016 ISO: Obtain the Windows Server 2016 ISO file from the official Microsoft website or through my classroom instructor.

Windows 10 ISO: Obtain a Windows 10 ISO file from the official Microsoft website using the Windows 10 Media Creation Tool or through my classroom instructor.

Adequate System Resources: Ensure that my host machine has sufficient resources (CPU, RAM, and disk space) to allocate to the virtual machines.

Step-by-Step Guide:

1. **Creating a Virtual Network with Virtual Box**

After ensuring all the prerequisites were met I launched Virtual Box and created a virtual network. The reason I want to have this network is because it will allow my VM's to access the Internet through my host and the local network my host is on (ENSATS) as well as communicate with other virtual machines.

2. **Creating and Configuring a Virtual Machine**

In this step I created my first virtual machine which will be for the Server 2016 ISO file. In order to do this I had to create a name, select a type and version for the VM, and allocate the appropriate hardware resources such as memory, processing, and storage. Next, I connected the Virtual Machine I just created to the Virtual Network I made in step 1. I then mounted the Windows Server 2016 ISO file to the VM. To summarize, I now have my virtual machine Server2016 configured so that it is on the MyNatNetwork and it has the Windows Server 2016 ISO mounted.

3. Installing Windows Server 2016

In this step I started my virtual machine and installed Windows Server 2016. I first had to select the language and keyboard method and then choose the operating system I wanted. I chose “Windows Server 2016 Datatcenter Evaluation (Desktop Experience)”. I then had to accept the license terms, choose “Custom: Install Windows Only” and then choose the drive I wanted to install the operating system on. About 10 minutes later the OS was installed and I created the default administrator password.

4. Change Basic Setting and Get Familiar with the Desktop Experience

Next, I installed VirtualBox Guest Additions, set up the computer's network configuration and made sure it could reach the Internet as well as communicate with our Host computer. Then I changed the computer name.

Next, I played around to get familiar with the server OS. The primary way you manage the server is with a program that is included with all versions of Windows Server called “Server Manager”. By default, Server manager will launch when the operating system starts, but if it doesn’t it can be started by clicking the Windows button and selecting “Server Manager”. Server manager allows you to manage your local server as well as other servers on your local network. From here you can manage the computer name, IP address, firewall settings, Windows updates, view Events, Services, and more. On the left pane there is a Dashboard, Local Server, All Servers, and File and Storage Services. The first three items relate to the server or remote servers. The fourth is a server role called “File and Storage Services” (note that this is installed by default). If I install a new server role it will appear in this pane.

Last, I examined the Add Roles and Features page under “Manage.” A server Role is a set of software programs that allow a server to provide a specific service to its network. An example of a role would be adding the DHCP role to our server. This will allow the server to act as a DHCP server. Features are individual software programs that are sometimes required to be installed by Roles, although they can be independently installed without Roles as well.

5. Building the Domain Controller

In this step I created a Domain Controller by installing the Active Directory Domain Services (AD DS) role. To do this i used the manage window to open the add roles and features wizard. I used the wizard to add the domain controller role and the required features to allow it to function. After completing the wizard i went into the notification menu and promoted the server to a domain controller. In the domain controller configuration i created a new forest called itflee.com, finally i made the server a dns server and completed the setup wizard.

6. Creating, Configuring, and Installing Windows 10 as a Second Virtual Machine

In this step I created a second virtual machine which will be for the Windows 10 ISO file. I did this exactly the same as steps 2 and 3 above, but just used a different ISO image file to mount.

7. Joining the Windows 10 VM to the Domain

Next I added the new VM to the domain that I created. First I went into the adapter settings and gave the VM an ip address on the network. Then I went into name domain and group settings. From there I went into the change domain box and typed itflee.com and hit apply. I was then prompted to authorize the workstation so I entered the credentials of my administrator account and restarted the pc.

8. Adding the DHCP Server Role with Scopes, Exclusions, and Reservations

To add the dhcp i again opened the management menu and hit add roles and features. I then selected the dhcp server role and added the necessary features. After installation I configured an administrator for the dhcp using my administrator account. Then in dhcp settings i created a new scope called ipv4 scope and gave it the address of my network. Then I started the scope at 192.168.0.2 and ended at the address 192.168.0.255. Next I created an exclusion of addresses 192.168.0.2 - 192.168.0.25. I also added my domain as the dns server. Finally I activated the scope in dhcp settings. The final thing i did with dhcp was to make dhcp reservations

9. Creating a DNS Zone and DNS Resource Records

To create my DNS zones I went into the dns section of the tools tab. Then I right clicked on the forward lookup zone and created a new one through the setup wizard named mytestzone. Next i created a reverse lookup zone by using the wizard, i set it to be an ipv4 zone and gave it the id of my network. After I had created the zones I created resource records. I right clicked on mytestzone and hit other new records. I then created a cname record called dc and gave it a domain name. To make a pointer record I went into my reverse lookup zone and hit a new pointer record, and entered my host ip address and my hostname. To check if the dns worked I went into my dns server and used nslookup to search for my alias for the forward lookup, and then the network id to test the reverse lookup.

10. Creating and Managing User Accounts in Active Directory

In this part of the course I created user accounts. I went into the active directory tab in tools, once there i created a new organizational unit called managed users and created two more called users and administrators inside it. in the administrators OU i created a new user with my name. Then I made a password for the account and finished the wizard.

11. Creating Groups and Memberships in Active Directory

To add a user to a group you go into properties, go to the members-of tab and search for the group. Once you find the group you want you just click add user to group.

12. Creating and Managing Group Policy Objects (GPOs)

To create a GPO I right clicked on the itflee domain and clicked on create new GPO. in the GPO creation wizard i named it test GPO and hit done. Finally I deleted the link from itflee. To edit a GPO you right click it and hit edit to change the configuration.

13. Using Windows Powershell to Create User Accounts in Active Directory