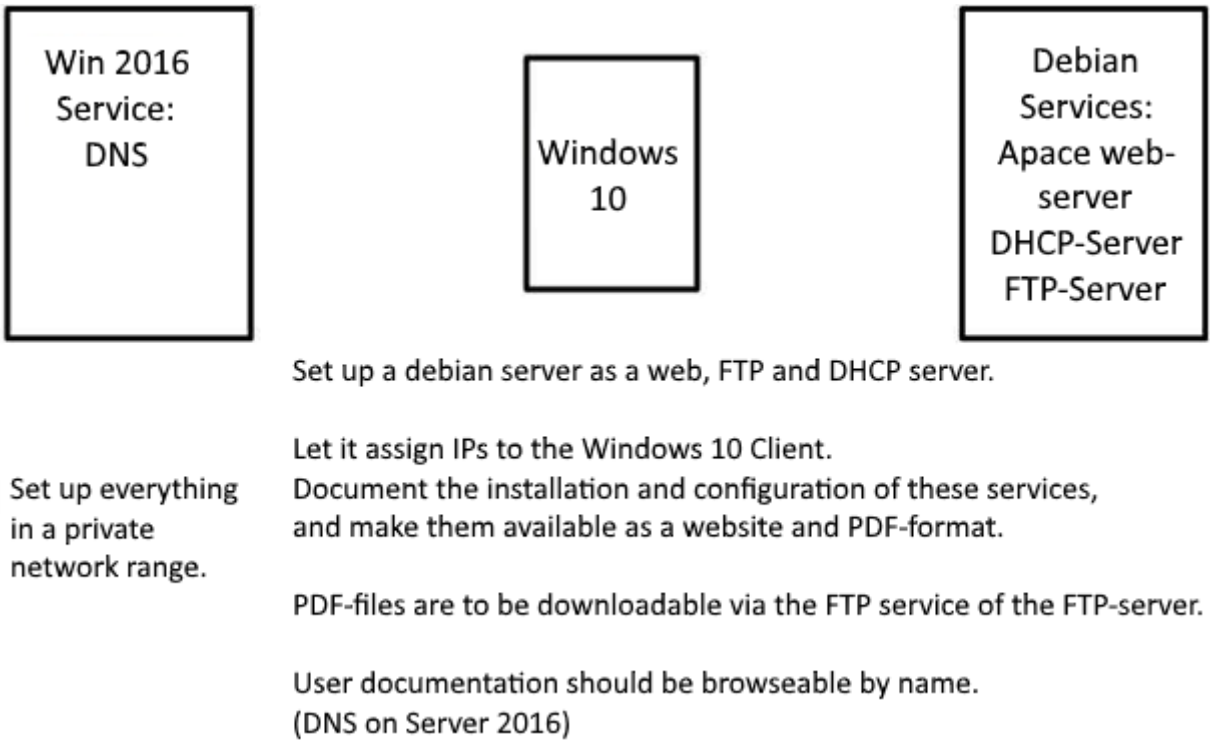
AK 11.03.2019

Assignment

This is an assignment I did at school. We were tasked with setting up 3 VMs with Debian, Server 2016 and one Win10 client.
I've named each VM AK(for ArbeidsKrav, Norwegian for required assignment) – and then their role in the network. Klient is Norwegian for client.
We were to configure each VM like this:

AK-Debian: Apache web-server, DHCP server, FTP server.
AK-Server: DNS (Domain Name Services).
AK-Klient: Blank.

Here's the full assignment, I've taken the liberty of translating it to English for your reading pleasure:



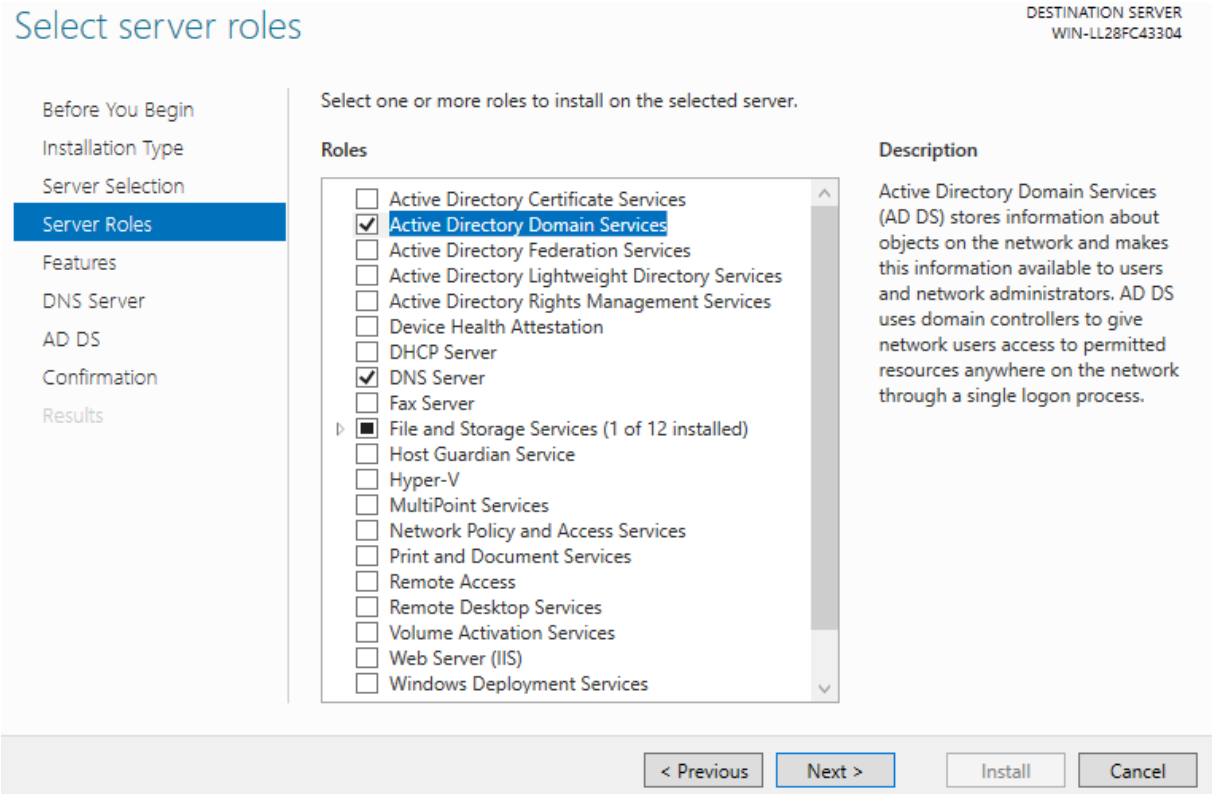
Documentation

Server 2016

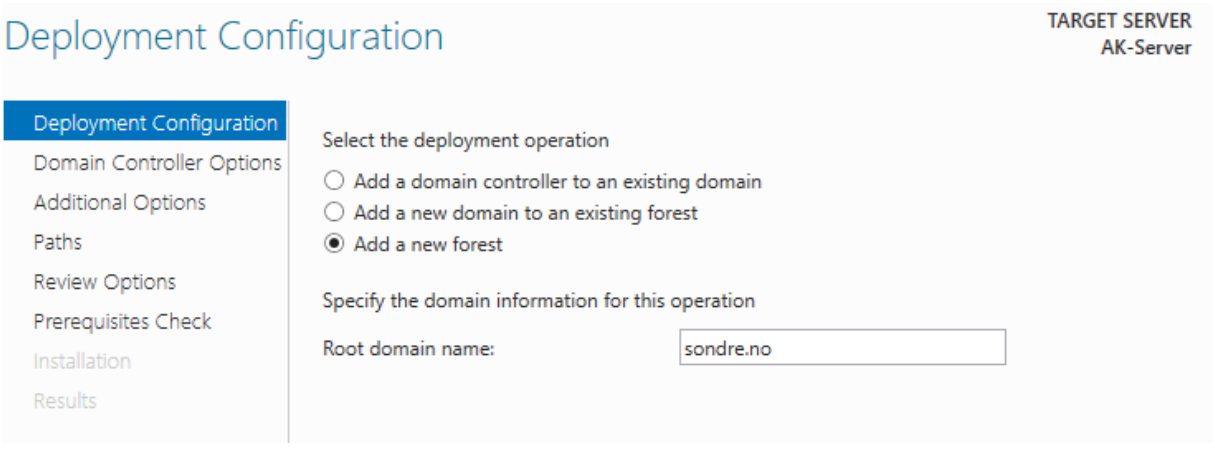
First thing I did was to set up 3 VMs with each their own operating systems. AK-Debian, AK-Server and AK-Klient-WIN10.

Then I started configuring the VMs, starting with Server 2016.

I installed the Active Directory Domain Services and DNS server roles.



After that I promoted the server to domain controller of the new domain Sondre.no



Then I just clicked next, next, next, install since I didn't need to change any more settings for this lab environment.

Debian initial setup

After I was done with installing the required services on Win2016, I started working on my Debian VM, starting with installing all the required services.

I downloaded an updated app list using this command:

```
sudo apt-get update
```

I downloaded and installed Apache2 using this command:

```
sudo apt-get install apache2
```

I downloaded and installed ISC DHCP Server using this command:

```
apt-get install isc-dhcp-server
```

I downloaded and installed vsFTPd server and FTP client using this command:

```
apt-get install vsftpd ftp
```

I then downloaded and installed 2 other utilities that would probably come in handy in the assignment:

```
apt-get install net-tools
apt-get install dnsutils
```

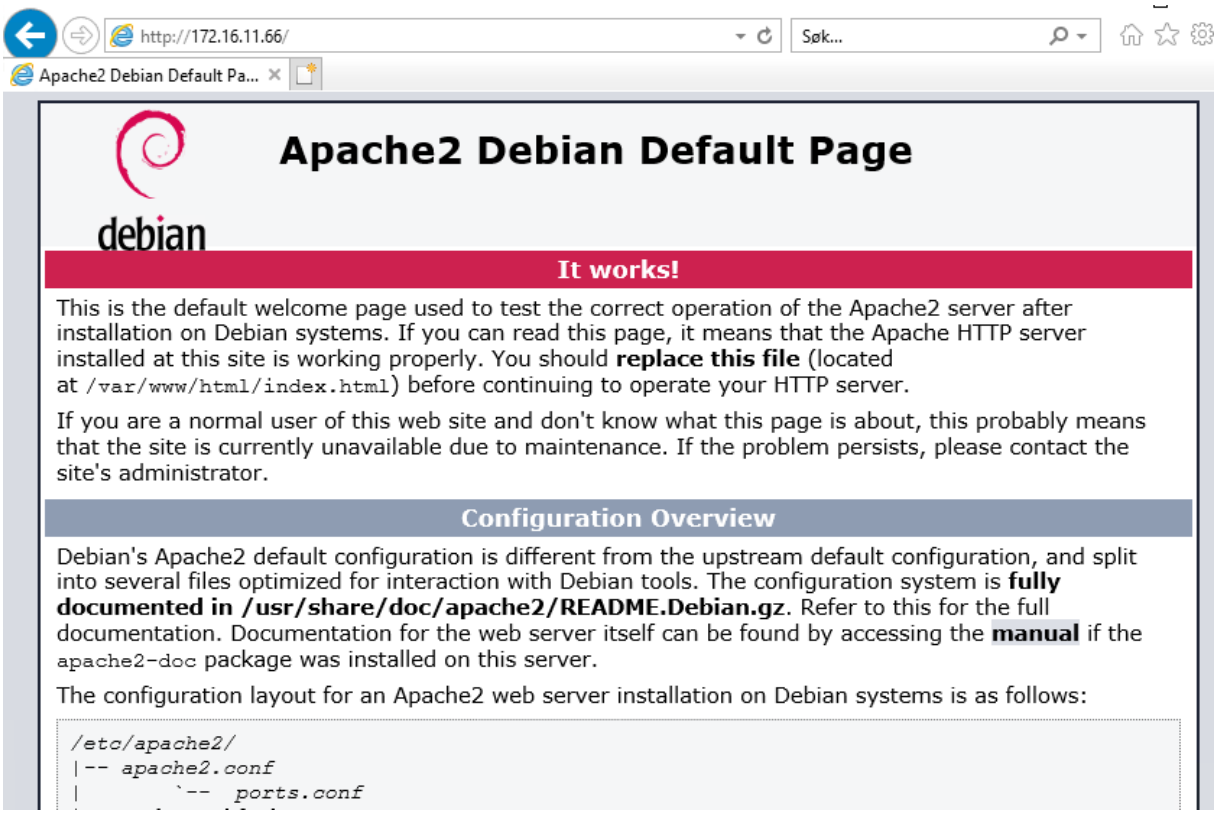
After I had installed everything I needed for the assignment, I turned the Debian off and made a control point in Hyper-V manager in case I made some big errors during setup.

Once the backup was done, I switched the Debian over to a virtual network in Hyper-V along with the Server2016 and win10 client and turned it back on.

I then changed network settings on the Debian to this (/etc/network/interfaces):

```
# The primary network interface
allow-hotplug eth0
iface eth0 inet static
 address 172.16.11.66
 netmask 255.255.255.0
 network 172.16.11.0
 broadcast 172.16.11.255
 gateway 172.16.11.1
 dns-nameservers 172.16.11.1
 dns-domain sondre.no
 dns-search sondre.no
```

After doing that I tested the Apache setup by going to the Debian's IP in a web browser on the win10 client. This page popped up, indicating Apache was set up correctly.



FTP

I then set about getting FTP to work, so I could transfer my website to the Debian.

`I opened the config file at /etc/vsftpd.conf` and added this line at the bottom:
`write_enable=YES`
And then I opened /etc/ftpusers, where users who are denied FTP access are listed. I removed root, since I need root access to transfer to the Apache folder.

Then I restarted vsftpd by running «`systemctl restart vsftpd`»

After that I ran a test using FTP via CMD on my windows 10 client. It seems to be working:

```
Microsoft Windows [Version 10.0.17134.376]
(c) 2018 Microsoft Corporation. Med enerett.

C:\Users\bruker>ftp 172.16.11.66
Connected to 172.16.11.66.
220 (vsFTPd 3.0.3)
200 Always in UTF8 mode.
User (172.16.11.66:(none)): root
331 Please specify the password.
Password:
230 Login successful.
ftp> cd /var/www/html/
250 Directory successfully changed.
ftp> ls
200 PORT command successful. Consider using PASV.
150 Here comes the directory listing.
index.html
226 Directory send OK.
ftp> put C:\Users\bruker\Desktop\testftp.txt
200 PORT command successful. Consider using PASV.
150 Ok to send data.
226 Transfer complete.
ftp: 8 bytes sent in 0.00Seconds 8000.00Kbytes/sec.
ftp> ls
200 PORT command successful. Consider using PASV.
150 Here comes the directory listing.
index.html
testftp.txt
226 Directory send OK.
ftp: 28 bytes received in 0.00Seconds 28000.00Kbytes/sec.
```

Upon checking the directory on the Debian, I can see the testftp file, indicating that it’s working. I now know that I can upload my website to the Apache directory with no issues.

DHCP

Before I started configuring DHCP, I created another control point of the Debian VM.

Then I ran this command to set the eth0 interface for DHCP:
dpkg-reconfigure isc-dhcp-server

Then I configured the dhcpd config file at /etc/dhcp/dhcpd.conf like this:

```
# A slightly different configuration for an internal subnet.
subnet 172.16.11.0 netmask 255.255.255.0 {
  range 172.16.11.150 172.16.11.200;
  option domain-name-servers 172.16.11.1;
#  option domain-name "sondre.no";
#  option routers 172.16.11.1;
#  option broadcast-address 172.16.11.255;
  default-lease-time 600;
  max-lease-time 7200;
}
```

I also commented out other conflicting settings.

After configuring DHCP I restarted the service by running these 2 commands:
service isc-dhcp-server stop
service isc-dhcp-server start

Then I ran a test on my win10 client to test if the DHCP was working(ipconfig /all):

```
Ethernet adapter Ethernet 2:

   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Microsoft Hyper-V Network Adapter #2
   Physical Address. . . . . . . . . : 00-15-5D-1B-32-1F
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes
   IPv4 Address. . . . . . . . . . . : 172.16.11.151(Preferred)
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Lease Obtained. . . . . . . . . . : onsdag 13. mars 2019 14.03.56
   Lease Expires . . . . . . . . . . : onsdag 13. mars 2019 14.13.56
   Default Gateway . . . . . . . . . :
   DHCP Server . . . . . . . . . . . : 172.16.11.66
   DNS Servers . . . . . . . . . . . : 172.16.11.1
   NetBIOS over Tcpip. . . . . . . . : Enabled
```

As we can see, I got an address in the range and lease-time that was configured. Therefore we can confirm DHCP as working.

Website

With every single service working as required, I could start setting up the website to publish on the server. I won't be able to document the transfer of the website from my computer to the server, but I'm planning on transferring the website folder to the win10 client, and from there transferring it to the Debian server via FTP.
Website template I'll be using: https://sondret5.github.io/

Useful links I used during the project:

https://www.digitalocean.com/community/tutorials/how-to-configure-the-apache-web-server-on-an-ubuntu-or-debian-vps

https://wiki.debian.org/DHCP_Server

https://www.howtoforge.com/tutorial/install-and-configure-isc-dhcp-server-in-debian-9/

https://linuxconfig.org/how-to-configure-ftp-server-on-debian-9-stretch-linux