**Active Directory Plan:**

* Create 2 Windows Server 2019 VMs to act as domain controllers
* Click Manage, Add Roles and Features
* Select ‘Role-Based or Feature-Based Installation’
* Select server to use as domain controller
* Install Active Directory Domain Services
* Install DNS Server role
* Promote server to domain controller
* Choose add new forest and make root domain name
* Create Directory Services Restore Mode password
* Complete installation and restart server

**Active Directory Documentation:**

* Login to server as administrator
* Open Server Manager and click ‘Local Server’ on the left pane
* Click Ethernet section on the right pane
* Right Click Ethernet icon and open ‘Properties’
* Select ‘Internet Protocol Version 4’ and click ‘Properties’
* Set static IP address and click OK
* Return to Server Manager, click manage, and select ‘Add Roles and Features’
* Select ‘Role-Based or Feature-Based Installation’ and click next
* Select server and click next
* Select ‘Active Directory Domain Services’ and ‘DNS’ and click next
* Click next through Features, AD DS, and DNS server and click Install
* When installation is complete click ‘Promote this server to a domain controller’
* Select ‘Add a new forest’ and enter a root domain name and click next
* Enter a DSRM password and click next
* Click next on DNS options and change NetBIOS domain name if necessary, then click next
* Click next on ‘Paths’, ‘Review Options’, and then click Install
* After the server reboots, log back in as Administrator and open Server Manager
* Click ‘Tools’ and select ‘DNS’
* Right click on ‘Reverse Lookup Zones’ and select ‘New Zone’
* In the New Zone Wizard, click next, select ‘Primary Zone’, check ‘Store zone in Active Directory’, and click next
* Select ‘To all DNS server running on domain controllers in this domain’ and click next
* Select ‘IPv4 Reverse Lookup Zone’ and click next
* Enter the first three numbers of your IP address in Network ID and click next
* Select ‘Allow only secure dynamic updates’ and click next, then click finish
* In ‘Forward Lookup Zones’ open the folder with the same name as your root domain
* Open Properties of host record for your domain name (will have the same name as your server)
* Check ‘Update associated pointer (PTR) record’ and click ok
* Go back to ‘Reverse Lookup Zones’ and open the zone you recently created
* Right click in the right pane and click refresh, a new Pointer record will appear
* Close DNS Manager and click Local Server in the left pane
* Click the ethernet section in the right pane
* Right click the ethernet icon and open ‘Properties’
* Select ‘Internet Protocol Version 4’ and open ‘Properties’
* In preferred DNS server, enter the static IP of the server
* Verify that the DNS server is working properly by opening powershell and running nslookup
* Now create another VM to act as a second domain controller
* Login as administrator and open Server Manager
* Set a static IP and set DNS server to the first domain controller
* Go back to the Local Server pane and click on the Workgroup section
* Click the ‘Change” button and select ‘Domain’
* Enter the name of your domain and click OK
* Restart the server and open Server Manager
* Use nslookup to verify that the new domain controller is part of the domain
* In Server Manager, click ‘Manage’ and select ‘Add Roles and Features’
* In ‘Server Roles’ select ‘Active Directory Domain Services’
* Click next through the rest of the menus and then click install
* Click ‘Promote this server to a domain controller’
* Select ‘Add a domain controller to an existing domain’ and enter the domain name
* Click ‘Change’ under ‘Supply the credentials to perform this operation’ and enter the credentials for the Administrator account, then click next
* Set DSRM password and click next and next again
* Select the domain controller to replicate from and then click next
* Click next through the rest of the menus, then click install
* The server will restart