Windows Servers

Assignment 1 – Creating the basis for lab environment

Task 1 – Acquire images

1. Copy images from \\ghost.labranet.jamk.fi\temp\partla to your workstations D-drive
    a. Windows Server 2016 Evaluation
    b. Windows 10 Evaluation
    c. VyOS 1.18

Task 2 – Learn VirtualBox guide by heart

1. While copying/downloading images, read the VirtualBox helper guide
2. Create directories mentioned in VirtualBox helper guide
3. Apply VirtualBox settings mentioned in VirtualBox helper guide

Task 3 – Create base templates for servers and workstations, create router

1. Create three (3) Virtual Machines in Virtual Box using the information below
    a. First VM: Server 2016
        i. Name: server-2016-template or similar
        ii. Type: Microsoft Windows
        iii. Version: Windows 2016 (64-bit)
        iv. Memory: 2048 MB
        v. Disk: 32 GB
            1. VDI

2. Dynamically allocated

vi. Settings -> General -> Advanced -> Clipboard & Drag'n'Drop -> Bidirectional

vii. Settings -> Storage

1. Mount Server 2016 Evaluation ISO

viii. Settings -> Network

1. Adapter 1 -> Enable

2. Attached to: Bridged Adapter (Ethernet Connection)

b. Second VM: Windows 10

i. Name: windows-10-template or similar

ii. Type: Microsoft Windows

iii. Version: Windows 10 (64-bit)

iv. Memory: At least 1536 MB (2048 Recommended)

v. Disk: 32 GB

1. VDI

2. Dynamically allocated

vi. Settings -> General -> Advanced -> Clipboard & Drag'n'Drop -> Bidirectional

vii. Settings -> Storage

1. Mount Windows 10 Evaluation ISO

viii. Settings -> Network

1. Adapter 1 -> Enable

2. Attached to: Bridged Adapter (Ethernet Connection)

c. Third VM: VyOS 1.18

i. Name: fw.YourStudentID.local (ie. fw.a1234.local)

ii. Type: Linux

iii. Version: Debian (64-bit)

iv. Memory: 512 MB

v. Disk: 2 GB

1. VDI
2. Dynamically allocated

vi. Settings -> Display

1. Reduce memory to minimum (1MB)

vii. Settings -> Storage

1. Mount VyOS 1.18 ISO

viii. Settings -> Network

1. Adapter 1,2,3 and 4 -> Enable
    a. Adapter 1
        i. Attached to: Bridged Adapter (Ethernet Connection)
    b. Adapter 2
        i. Attached to: Internal Network
        ii. Name: transit
    c. Adapter 3
        i. Attached to: Internal Network
        ii. Name: srv
    d. Adapter 4
        i. Attached to: Internal Network
        ii. Name: mgmt.

Task 4 – Installation & Customization

1. Launch VMs
2. Install operating systems
    a. Server 2016 – Datacenter edition has a few features the standard doesn't
    b. Choose Desktop Experience (Try Server Core at some point though)
    c. Vyos -> https://wiki.vyos.net/wiki/Installation
        i. After you've completed installing VyOS

1. Sudo poweroff
2. Remove VyOS ISO from Storage settings (otherwise you're running it from live image)
3. Launch VM
4. (Optional: Change keyboard layout)
    a. sudo dpkg-reconfigure keyboard-configuration
    b. Reboot after

3. Install VirtualBox Guest Additions to Server 2016 and Windows 10 VMs
    a. Virtualbox Dropdown -> Devices -> Insert Guest Additions CD image
        i. This PC -> CD Drive "VirtualBox Guest Additions" -> VBoxWindowsAdditions-amd64
    b. Install optional software at this point
    c. Some useful software: Mozilla, Putty, WinSCP, Wireshark
4. Run sysprep in Server 2016 and Windows 10
    a. Generalize
    b. Out-of-Box Experience
    c. Shutdown

NOTE! No need to touch these anymore. If you break a server or workstations, clone a new one from these template VMs. Do not use VirtualBox snapshots if possible.

Task 5 – Clone VMs

1. Create four (4) clones of Server 2016
    a. Reinitialize the MAC address of all network cards!
    b. Names:
        i. dc1.YourStudentID.local (ie. dc1.a1234.local)
        ii. dc2.YourStudentID.local (ie. dc2. a1234.local)
        iii. fs1.YourStudentID.local (ie. fs1. a1234.local)
        iv. fs2.YourStudentID.local (ie. fs2. a1234.local)

c. Change the network settings of Adapter 1 on all servers

   i. Attached to: Internal Network

   ii. Name: srv

2. Create one (1) clone of Windows 10

   a. Reinitialize the MAC!

   b. Linked Clone

   c. Name: mgmt-ws-01.YourStudentID.local (ie. mgmt-ws-01.a1234.local)

   d. Change the network settings of Adapter 1

      i. Attached to: Internal Network

      ii. Name: mgmt.

Task 6 – Configure hostnames and addressing

1. Configure VyOS network interfaces

   a. Enter configuration mode

   vyos@vyos$ configure

   set interfaces ethernet eth0 address dhcp
   set interfaces ethernet eth0 description WAN
   set interfaces ethernet eth1 address 10.255.255.1/24
   set interfaces ethernet eth1 description TRANSIT
   set interfaces ethernet eth2 address 10.20.10.1/24
   set interfaces ethernet eth2 description SRV
   set interfaces ethernet eth3 address 10.20.20.1/24
   set interfaces ethernet eth3 description MGMT

   set service ssh port 22

   set nat source rule 10 outbound-interface eth0
   set nat source rule 10 source address 10.0.0.0/8
   set nat source rule 10 translation address masquerade
   set nat source rule 10 description NAT-ALL

   commit

   save

2. Launch cloned VMs dc1, dc2, fs1 and fs2
3. Configure hostnames to match those in VM names (use the host part of the dns name = dc1 for dc1.a1234.local)

    a. QUESTION: How do you configure hostnames using PowerShell?shut

```
PS C:\Users\Administrator> Rename-Computer -NewName dc1 -LocalCredential WIN-QU0NR3TM3DU\Administrator -PassTh

HasSucceeded OldComputerName           NewComputerName
------------ ---------------           ---------------
True         WIN-QU0NR3TM3DU           dc1
WARNING: The changes will take effect after you restart the computer WIN-QU0NR3TM3DU.
```

4. Configure network interfaces to match the IP addressing scheme described in the topology picture

    a. Use LabraNet DNS servers for dc1 and dc2

        i. 192.168.40.21, 192.168.40.22

    b. Use dc1 and dc2 IP addresses as DNS server addresses for fs1 and fs2

    c. QUESTION: How do you configure IP addressing using PowerShell?

```
PS C:\Users\m3227> New-NetIPAddress -dc1 "Wired Ethernet Connection" -IPv4Address "10.20.10.10" -PrefixLength 24 -DefaultGateway 10.20.10.1
```

    d. QUESTION: How do you configure DNS server addresses using PowerShell?

```
PS C:\Users\m3227> Set-DnsClientServerAddress -dc1 "Wired Ethernet Connection" -ServerAddresses 192.168.40.21, 192.168.40.22
```

Task 7 – Cleaning up (Optional)

1. Delete ISO files after installation