# **Assignment 3**

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**1. Create a virtual machine having the os centos.**

* 1. **Install firewall in the vm(centos might have firewall installed in default).(firewalld or iptables)**
  2. **Block certain ip range/subnet using firewalld.**
  3. **Allow http, https and ssh connection using firewall.**
  4. **You can add other rules as well as you prefer.**

**Note: The firewall rules should be saved permanently.**

| Answer:   1. **firewall in the vm** |
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| 1. **Block certain ip range/subnet using firewalld.**   **firewall-cmd --permanent --add-rich-rule=”rule family=’ipv4’ source address=’192.168.10.0/24’ reject”** |
| 1. **Allow http, https and ssh connection using firewall.**     Commands:  **firewall-cmd --permanent --add-service=http**  **firewall-cmd --permanent --add-service=https**  **firewall-cmd --permanent --add-service=ssh** |
| **d. You can add other rules as well as you prefer.**  **firewall-cmd --permanent --add-service=dhcpd** |

**2. Create one vm with 2 network interfaces one should behave as WAN and another as LAN. Create another vm attaching the previously created LAN interface to it.**

* 1. **Implement NAT in the first vm, so that the second vm can access the internet.**

**Note: Configure the first vm as a router, so make the LAN interfaces in the first vm as gateway to the LAN network. And in the second vm configure the gateway to the ip of the first vm LAN ip**

**VM1: centos 7**

**VM2: ubuntu**

| Answer  First I create host-only Network adapter in VirtualBox |
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| Two network interfaces of **Centos 7**  **Bridge Adapter**    **Host-only Adapter** |

| Host-only adapter of **Ubuntu** |
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| Command:  **ip a** - of centos    We have two ip of **Centos**   * **192.168.1.139** for Bridge adapter * **10.10.1.1** for host-only network |

| **Ifcfg-enp0s3 (bridge)** |
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| **Ifcfg-enp0s8 (host-only)** |

| For **Ubuntu**    We have one ip - 10.10.10.100 |
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| Both can ping each other too through **host-only IP**  **Centos to Ubuntu**    **Ubuntu to centos** |

| **Forwarding ip on centos** so that host-only network can forward its packet to Bridge-network  **sysctl -w net.ipv4.ip\_forward=1**  -for temporary ip\_forwarding  **echo 1 > /proc/sys/net/ipv4/ip\_forward**    For permanent ip forwarding  **Create ip\_forward.conf file in /etc/sysctl.d**  **vi /etc/sysctl.d/ip\_forward.conf**  And add **net.ipv4.ip\_forward=1**  **sysctl -p /etc/sysctl.d/ip\_forward.conf**  You will get similar output like this |
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| Masquerading host only network with bridge network so that source of host network (**enp0s8**)packet can be transferred to destination to bridge network|(**enp0s3**)    Command:  **firewall-cmd --permanent --direct --passthrough ipv4 -t nat -I POSTROUTING -o enp0s3 -j MASQUERADE -s enp0s8** |
| We have to assign gateway of ubuntu to ip of host-only network of vm1  **route add default gw 10.10.1.1**  **systemctl restart network-manager**  Now we can see through **VM2-ubuntu**, we can ping to router IP too    ip details of **ubuntu** |