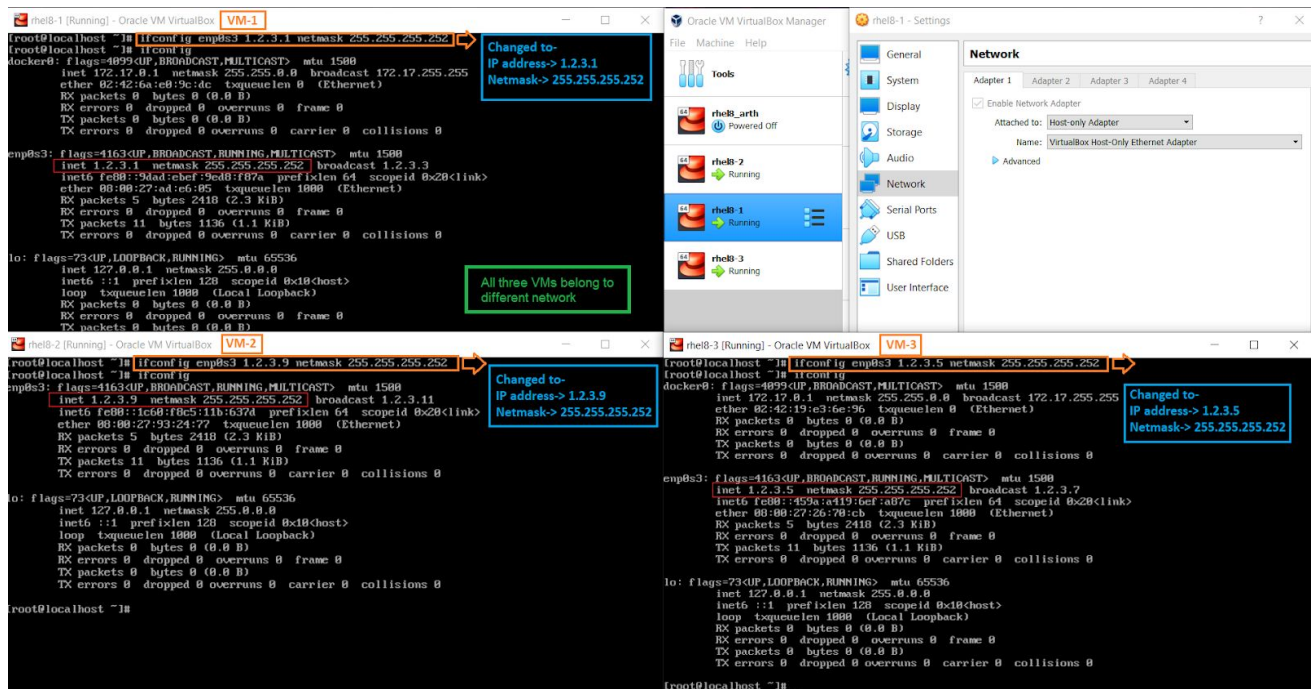
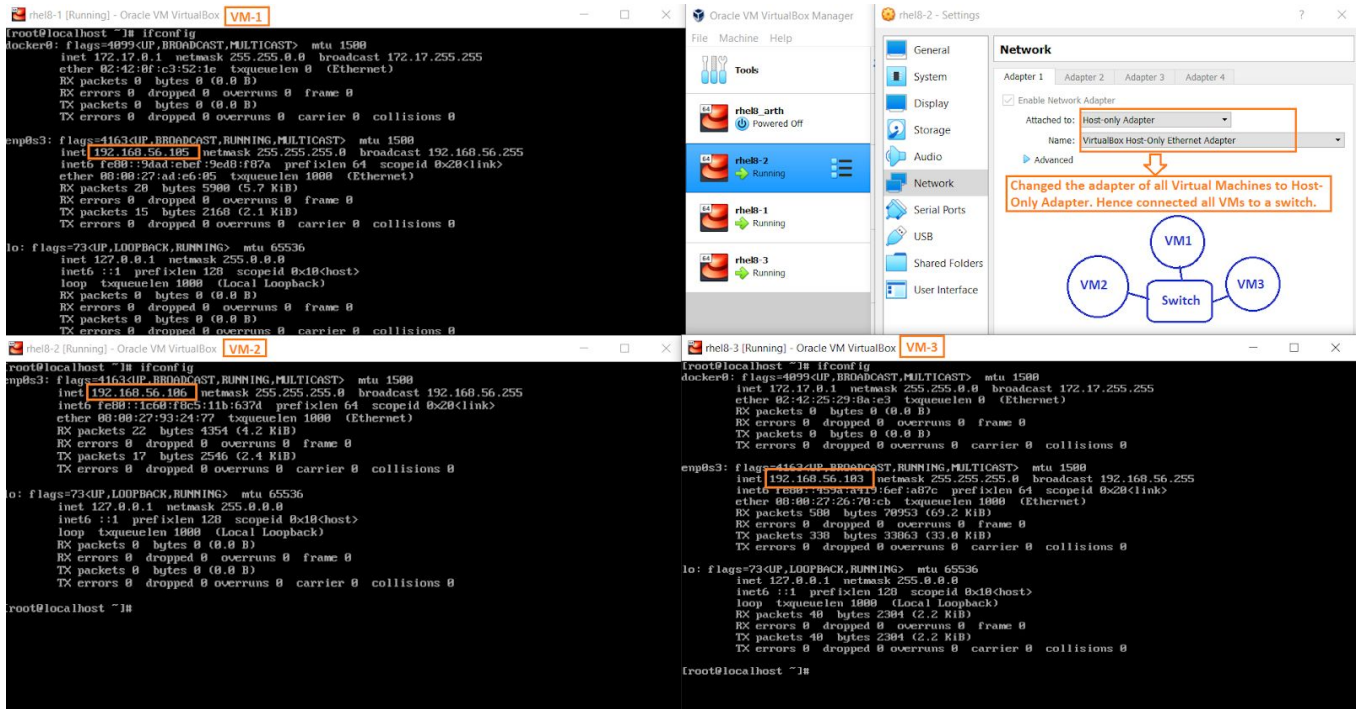


Task Description

Create a network Topology Setup in such a way so that System A can ping to two Systems System B and System C but both these systems should not be pinging each other without using any security rule e.g firewall etc .



rhel8-1 (Running) - Oracle VM VirtualBox VM-1

```
root@localhost ~# route -n
Kernel IP routing table
Destination Gateway Genmask Flags Metric Ref Use Iface
172.17.0.0 0.0.0.0 255.255.0.0 U 0 0 0 docker0
root@localhost ~# route add -net 1.2.3.0 netmask 255.255.255.0 emps3
root@localhost ~# route -n
Kernel IP routing table
Destination Gateway Genmask Flags Metric Ref Use Iface
1.2.3.0 0.0.0.0 255.255.255.0 U 0 0 0 emps3
172.17.0.0 0.0.0.0 255.255.0.0 U 0 0 0 docker0
root@localhost ~#
```

Added rule in routing table that will allow OS to create data packets for IP addresses which lie in the network-
Network name-> 1.2.3.0
Netmask-> 255.255.255.0

Now VM1 can ping to a bigger network (Netmask- 255.255.255.0) which includes both VM2 and VM3 each belonging to a different network.

Oracle VM VirtualBox Manager

rhel8-1 - Settings

Network

Adapter 1 Adapter 2 Adapter 3 Adapter 4

☒ Enable Network Adapter

Attached to: Host-only Adapter

Name: VirtualBox Host-Only Ethernet Adapter

Advanced

rhel8-2 (Running) - Oracle VM VirtualBox VM-2

```
root@localhost ~# route -n
Kernel IP routing table
Destination Gateway Genmask Flags Metric Ref Use Iface
172.17.0.0 0.0.0.0 255.255.0.0 U 0 0 0 docker0
root@localhost ~# route add -net 1.2.3.0 netmask 255.255.255.252 emps3
root@localhost ~# route -n
Kernel IP routing table
Destination Gateway Genmask Flags Metric Ref Use Iface
1.2.3.0 0.0.0.0 255.255.255.252 U 0 0 0 emps3
172.17.0.0 0.0.0.0 255.255.0.0 U 0 0 0 docker0
root@localhost ~#
```

Added rule in routing table which will allow to send data packets to the network-
Network name-> 1.2.3.0
Netmask-> 255.255.255.252

VM2 can ping only to the network that contains VM1, but doesn't contain VM3

rhel8-3 (Running) - Oracle VM VirtualBox VM-3

```
root@localhost ~# route -n
Kernel IP routing table
Destination Gateway Genmask Flags Metric Ref Use Iface
172.17.0.0 0.0.0.0 255.255.0.0 U 0 0 0 docker0
root@localhost ~# route add -net 1.2.3.0 netmask 255.255.255.252 emps3
root@localhost ~# route -n
Kernel IP routing table
Destination Gateway Genmask Flags Metric Ref Use Iface
1.2.3.0 0.0.0.0 255.255.255.252 U 0 0 0 emps3
172.17.0.0 0.0.0.0 255.255.0.0 U 0 0 0 docker0
root@localhost ~#
```

Added rule in routing table -
Network name-> 1.2.3.0
Netmask-> 255.255.255.252

VM3 can ping to network of VM1, which doesn't contain VM2

rhel8-1 (Running) - Oracle VM VirtualBox

```
root@localhost ~# ping 1.2.3.5
PING 1.2.3.5 (1.2.3.5) 56(84) bytes of data:
64 bytes from 1.2.3.5: icmp_seq=1 ttl=64 time=0.732 ms
64 bytes from 1.2.3.5: icmp_seq=2 ttl=64 time=0.580 ms
64 bytes from 1.2.3.5: icmp_seq=3 ttl=64 time=0.696 ms
64 bytes from 1.2.3.5: icmp_seq=4 ttl=64 time=1.26 ms
64 bytes from 1.2.3.5: icmp_seq=5 ttl=64 time=0.515 ms
64 bytes from 1.2.3.5: icmp_seq=6 ttl=64 time=0.864 ms
64 bytes from 1.2.3.5: icmp_seq=7 ttl=64 time=1.28 ms
64 bytes from 1.2.3.5: icmp_seq=8 ttl=64 time=1.25 ms
64 bytes from 1.2.3.5: icmp_seq=9 ttl=64 time=1.10 ms
^C
--- 1.2.3.5 ping statistics ---
9 packets transmitted, 9 received, 0% packet loss, time 128ms
rtt min/avg/max/mdev = 0.515/0.921/1.281/0.290 ms
root@localhost ~# ping 1.2.3.9
PING 1.2.3.9 (1.2.3.9) 56(84) bytes of data:
64 bytes from 1.2.3.9: icmp_seq=1 ttl=64 time=1.55 ms
64 bytes from 1.2.3.9: icmp_seq=2 ttl=64 time=1.23 ms
64 bytes from 1.2.3.9: icmp_seq=3 ttl=64 time=0.731 ms
64 bytes from 1.2.3.9: icmp_seq=4 ttl=64 time=0.718 ms
64 bytes from 1.2.3.9: icmp_seq=5 ttl=64 time=0.993 ms
64 bytes from 1.2.3.9: icmp_seq=6 ttl=64 time=0.600 ms
64 bytes from 1.2.3.9: icmp_seq=7 ttl=64 time=0.751 ms
^C
--- 1.2.3.9 ping statistics ---
7 packets transmitted, 7 received, 0% packet loss, time 118ms
rtt min/avg/max/mdev = 0.600/0.939/1.516/0.316 ms
root@localhost ~#
```

As we can see, VM1 can ping both VM2 and VM3

rhel8-2 (Running) - Oracle VM VirtualBox

```
root@localhost ~# ifconfig
emp8s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 1.2.3.9 netmask 255.255.255.252 broadcast 1.2.3.11
    inet6 fe80::1c60:f8c5:11b:637d prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:93:24:77 txqueuelen 1000 (Ethernet)
    RX packets 21 bytes 3836 (3.7 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 20 bytes 1942 (1.8 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
root@localhost ~#
```

rhel8-3 (Running) - Oracle VM VirtualBox

```
root@localhost ~# ifconfig
docker0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
    inet 172.17.0.1 netmask 255.255.0.0 broadcast 172.17.255.255
    ether 02:42:19:c3:6e:96 txqueuelen 0 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

emp8s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 1.2.3.5 netmask 255.255.255.252 broadcast 1.2.3.7
    inet6 fe80::459a:a419:6e1:a87c prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:26:70:cb txqueuelen 1000 (Ethernet)
    RX packets 23 bytes 4032 (3.9 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 22 bytes 2130 (2.0 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
root@localhost ~#
```

Oracle VM VirtualBox Manager

rhel8-1 - Settings

Network

Adapter 1 Adapter 2 Adapter 3 Adapter 4

☒ Enable Network Adapter

Attached to: Host-only Adapter

Name: VirtualBox Host-Only Ethernet Adapter

Advanced

rhel8-1 [Running] - Oracle VM VirtualBox VM1

```
[root@localhost ~]# ifconfig
docker0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
    inet 172.17.0.1 netmask 255.255.0.0 broadcast 172.17.255.255
    ether 02:42:6a:e8:9c:dc txqueuelen 0 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 1.2.3.1 netmask 255.255.255.252 broadcast 1.2.3.3
    inet6 fe80::9dad:ebef:9cd8:f87a prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:ad:e6:85 txqueuelen 1000 (Ethernet)
    RX packets 39 bytes 5870 (5.7 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 32 bytes 3262 (3.1 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

[root@localhost ~]#
```

rhel8-2 [Running] - Oracle VM VirtualBox VM2

```
[root@localhost ~]# ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 1.2.3.9 netmask 255.255.255.252 broadcast 1.2.3.11
    inet6 fe80::1c68:f8c5:11b:637d prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:93:24:77 txqueuelen 1000 (Ethernet)
    RX packets 57 bytes 11300 (11.0 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 30 bytes 3066 (2.9 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

[root@localhost ~]#
```

rhel8-3 [Running] - Oracle VM VirtualBox VM3

```
[root@localhost ~]# ping 1.2.3.9
connect: Network is unreachable
[root@localhost ~]#
```

rhel8-1 - Settings

Network

Adapter 1 Adapter 2 Adapter 3 Adapter 4

☒ Enable Network Adapter

Attached to: Host-only Adapter

Name: VirtualBox Host-Only Ethernet Adapter

Advanced

rhel8-1 [Running] - Oracle VM VirtualBox VM1

rhel8-2 [Running] - Oracle VM VirtualBox VM2

rhel8-3 [Running] - Oracle VM VirtualBox VM3

VM3 unable to create data packets for VM2. Hence, can't ping it.