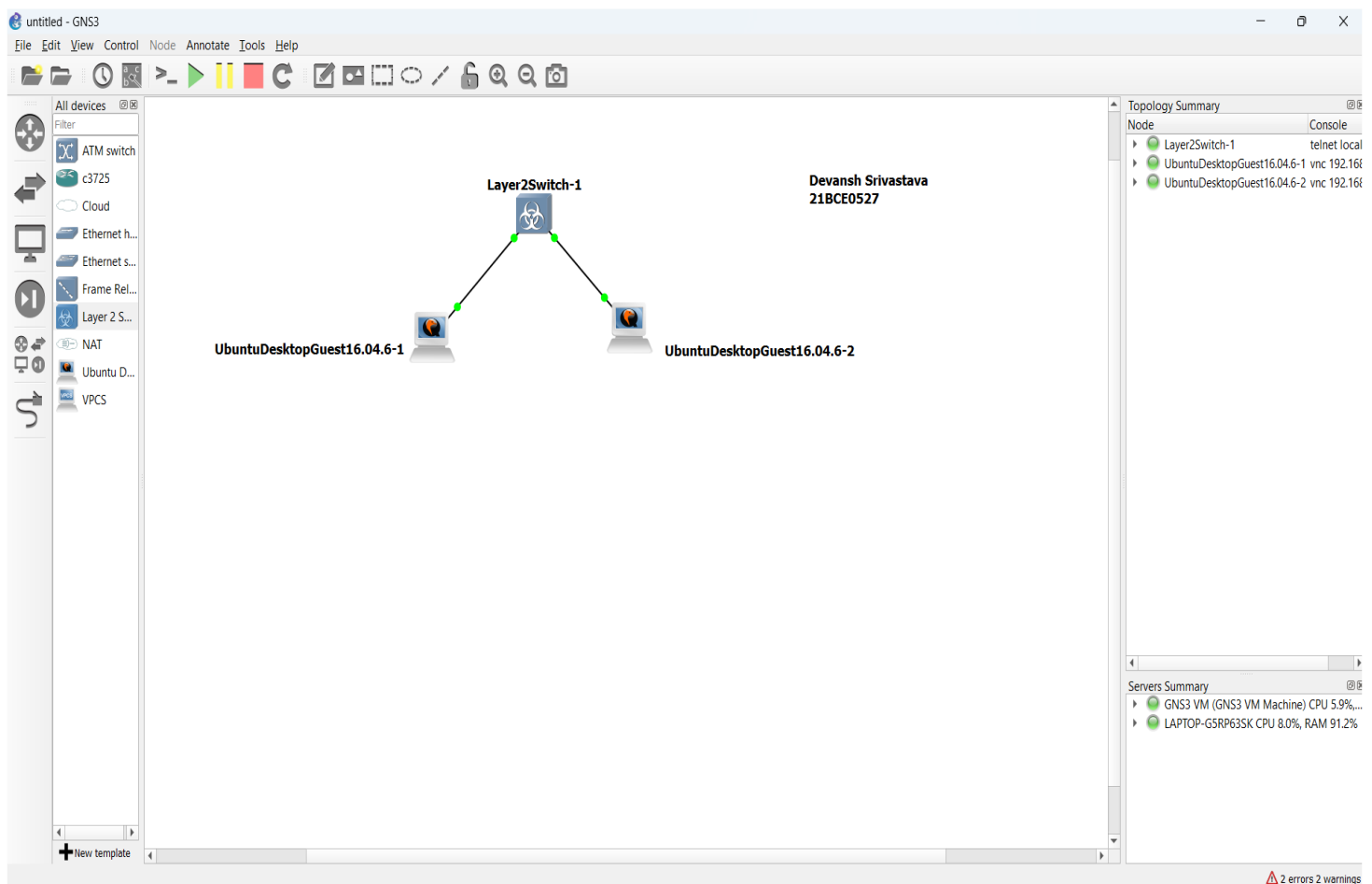


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Q5.Create a simple LAN setup with two Linux machines connected via a switch.Ping from one machine to the other. If it fails, use ifconfig to ensure the IP addresses are configured correctly..Use traceroute to identify where the packets are being dropped if the ping fails.

Network Diagram



Configuring IP Address in Linux VM1

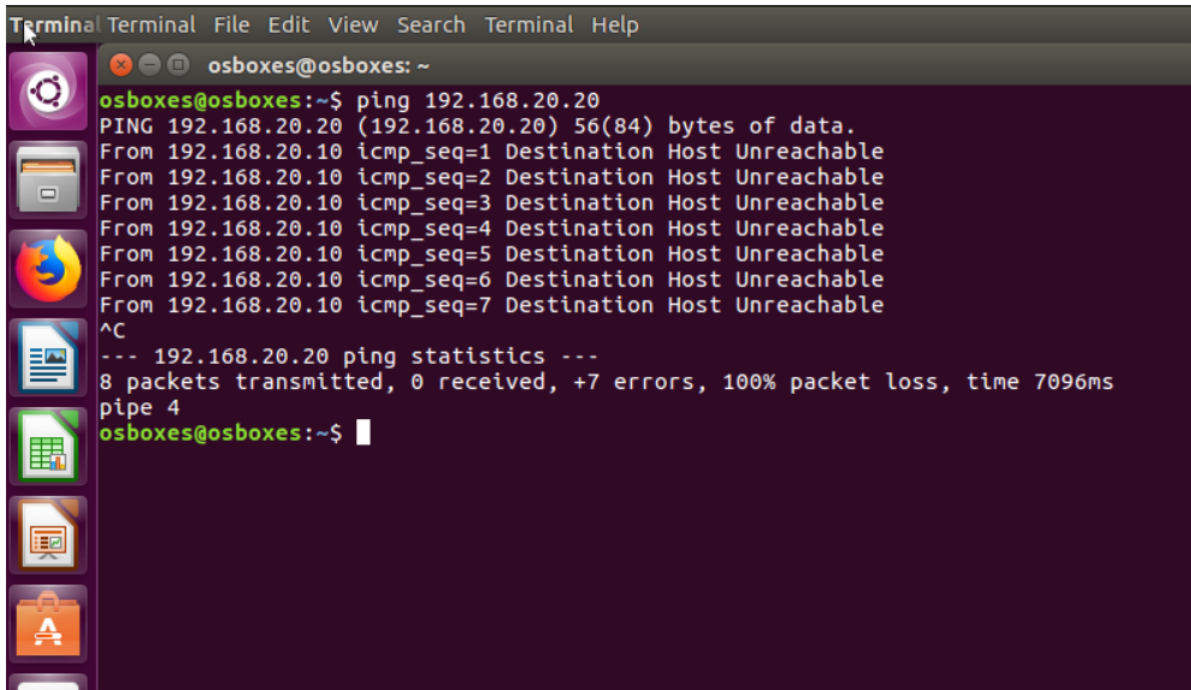
```
sudo ifconfig ens3 192.168.20.10 netmask 255.255.255.0 up
```

Configuring IP Address in Linux VM2

```
sudo ifconfig ens3 192.168.20.20 netmask 255.255.255.0 up
```

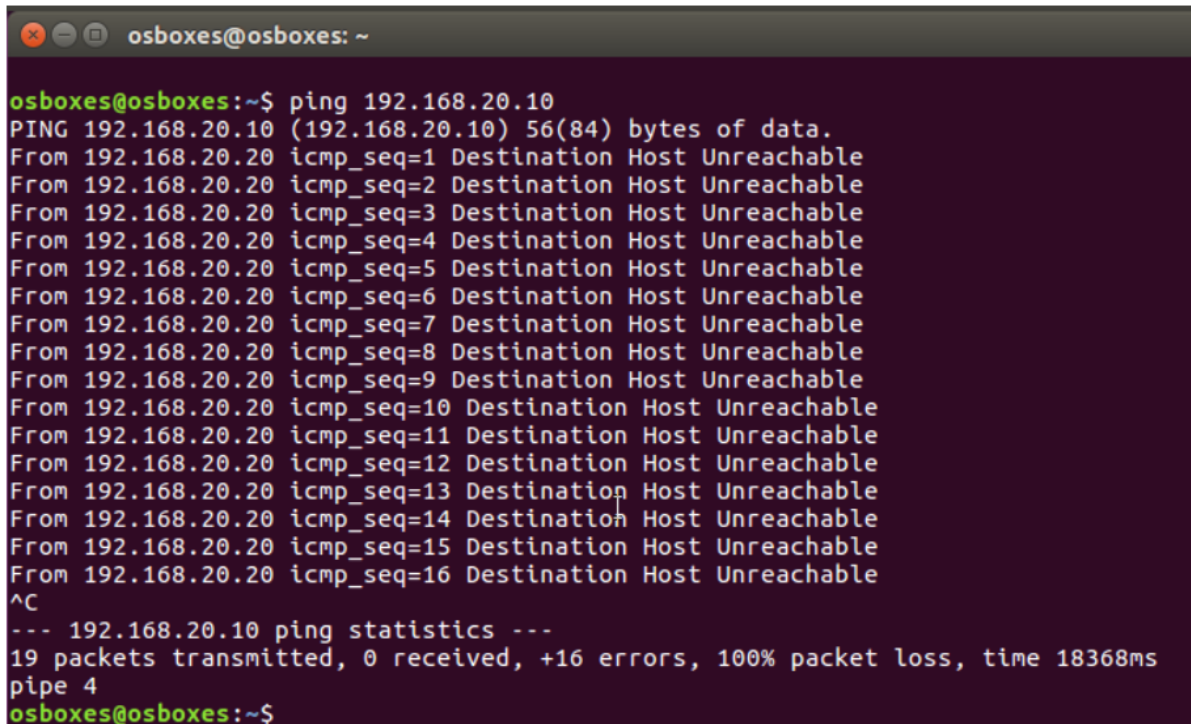
Testing the ping command:

Pinging from Linux VM1 to Linux VM2

A terminal window titled 'Terminal' with a menu bar (Terminal, File, Edit, View, Search, Terminal, Help). The prompt is 'osboxes@osboxes: ~'. The user enters 'ping 192.168.20.20'. The output shows 8 ICMP echo requests from 192.168.20.10 to 192.168.20.20, all resulting in 'Destination Host Unreachable'. The user presses Ctrl-C (^C), and the terminal shows '--- 192.168.20.20 ping statistics ---' followed by '8 packets transmitted, 0 received, +7 errors, 100% packet loss, time 7096ms pipe 4'. The prompt returns to 'osboxes@osboxes: ~\$'.

```
Terminal Terminal File Edit View Search Terminal Help
osboxes@osboxes: ~
osboxes@osboxes:~$ ping 192.168.20.20
PING 192.168.20.20 (192.168.20.20) 56(84) bytes of data.
From 192.168.20.10 icmp_seq=1 Destination Host Unreachable
From 192.168.20.10 icmp_seq=2 Destination Host Unreachable
From 192.168.20.10 icmp_seq=3 Destination Host Unreachable
From 192.168.20.10 icmp_seq=4 Destination Host Unreachable
From 192.168.20.10 icmp_seq=5 Destination Host Unreachable
From 192.168.20.10 icmp_seq=6 Destination Host Unreachable
From 192.168.20.10 icmp_seq=7 Destination Host Unreachable
^C
--- 192.168.20.20 ping statistics ---
8 packets transmitted, 0 received, +7 errors, 100% packet loss, time 7096ms
pipe 4
osboxes@osboxes:~$
```

Pinging from Linux VM2 to Linux VM1

A terminal window titled 'osboxes@osboxes: ~'. The user enters 'ping 192.168.20.10'. The output shows 16 ICMP echo requests from 192.168.20.20 to 192.168.20.10, all resulting in 'Destination Host Unreachable'. The user presses Ctrl-C (^C), and the terminal shows '--- 192.168.20.10 ping statistics ---' followed by '19 packets transmitted, 0 received, +16 errors, 100% packet loss, time 18368ms pipe 4'. The prompt returns to 'osboxes@osboxes: ~\$'.

```
osboxes@osboxes: ~
osboxes@osboxes:~$ ping 192.168.20.10
PING 192.168.20.10 (192.168.20.10) 56(84) bytes of data.
From 192.168.20.20 icmp_seq=1 Destination Host Unreachable
From 192.168.20.20 icmp_seq=2 Destination Host Unreachable
From 192.168.20.20 icmp_seq=3 Destination Host Unreachable
From 192.168.20.20 icmp_seq=4 Destination Host Unreachable
From 192.168.20.20 icmp_seq=5 Destination Host Unreachable
From 192.168.20.20 icmp_seq=6 Destination Host Unreachable
From 192.168.20.20 icmp_seq=7 Destination Host Unreachable
From 192.168.20.20 icmp_seq=8 Destination Host Unreachable
From 192.168.20.20 icmp_seq=9 Destination Host Unreachable
From 192.168.20.20 icmp_seq=10 Destination Host Unreachable
From 192.168.20.20 icmp_seq=11 Destination Host Unreachable
From 192.168.20.20 icmp_seq=12 Destination Host Unreachable
From 192.168.20.20 icmp_seq=13 Destination Host Unreachable
From 192.168.20.20 icmp_seq=14 Destination Host Unreachable
From 192.168.20.20 icmp_seq=15 Destination Host Unreachable
From 192.168.20.20 icmp_seq=16 Destination Host Unreachable
^C
--- 192.168.20.10 ping statistics ---
19 packets transmitted, 0 received, +16 errors, 100% packet loss, time 18368ms
pipe 4
osboxes@osboxes:~$
```

Verifying whether IP address is correctly configured:

Linux VM1

```
osboxes@osboxes: ~  
osboxes@osboxes:~$ ifconfig  
ens3      Link encap:Ethernet  HWaddr 0c:14:96:d8:00:00  
          inet addr:192.168.10.10  Bcast:192.168.10.255  Mask:255.255.255.0  
          inet6 addr: fe80::e14:96ff:fed8:0/64 Scope:Link  
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1  
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0  
          TX packets:168 errors:0 dropped:0 overruns:0 carrier:0  
          collisions:0 txqueuelen:1000  
          RX bytes:0 (0.0 B)  TX bytes:25897 (25.8 KB)  
  
lo        Link encap:Local Loopback  
          inet addr:127.0.0.1  Mask:255.0.0.0  
          inet6 addr: ::1/128 Scope:Host  
          UP LOOPBACK RUNNING  MTU:65536  Metric:1  
          RX packets:3668 errors:0 dropped:0 overruns:0 frame:0  
          TX packets:3668 errors:0 dropped:0 overruns:0 carrier:0  
          collisions:0 txqueuelen:1000  
          RX bytes:274112 (274.1 KB)  TX bytes:274112 (274.1 KB)  
  
osboxes@osboxes:~$
```

Linux VM2

```
osboxes@osboxes: ~  
osboxes@osboxes:~$ ifconfig  
ens3      Link encap:Ethernet  HWaddr 0c:14:96:d8:00:00  
          inet addr:192.168.10.10  Bcast:192.168.10.255  Mask:255.255.255.0  
          inet6 addr: fe80::e14:96ff:fed8:0/64 Scope:Link  
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1  
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0  
          TX packets:168 errors:0 dropped:0 overruns:0 carrier:0  
          collisions:0 txqueuelen:1000  
          RX bytes:0 (0.0 B)  TX bytes:25897 (25.8 KB)  
  
lo        Link encap:Local Loopback  
          inet addr:127.0.0.1  Mask:255.0.0.0  
          inet6 addr: ::1/128 Scope:Host  
          UP LOOPBACK RUNNING  MTU:65536  Metric:1  
          RX packets:3668 errors:0 dropped:0 overruns:0 frame:0  
          TX packets:3668 errors:0 dropped:0 overruns:0 carrier:0  
          collisions:0 txqueuelen:1000  
          RX bytes:274112 (274.1 KB)  TX bytes:274112 (274.1 KB)  
  
osboxes@osboxes:~$
```

Using Traceroute command to check where packets are being dropped:

```
osboxes@osboxes:~$ traceroute 192.168.20.20  
The program 'traceroute' can be found in the following packages:  
* inetutils-traceroute  
* traceroute  
Try: sudo apt install <selected package>  
osboxes@osboxes:~$  
  
osboxes@osboxes:~$ traceroute 192.168.20.10  
The program 'traceroute' can be found in the following packages:  
* inetutils-traceroute  
* traceroute  
Try: sudo apt install <selected package>  
osboxes@osboxes:~$
```

