Name: Khushei Meghana Meda

SRN: PES1201800416

Week number: 8

Name of experiment: IPv4 Static Addressing and Routing

Date: 08-11-2020

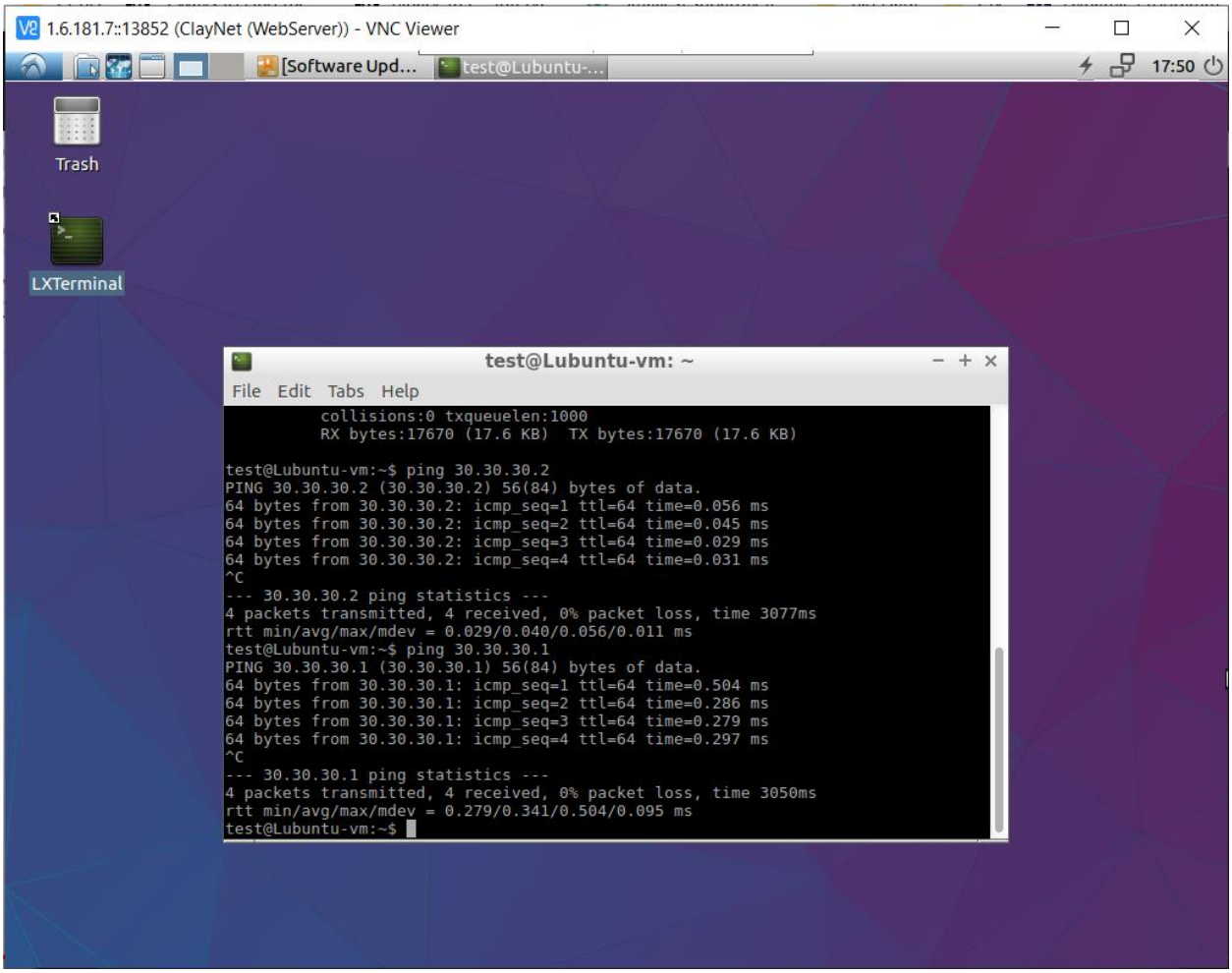
Objectives of the experiment: Understand the building blocks and usage of ClayNet Network Virtualization platform with reference to OSI Layer.

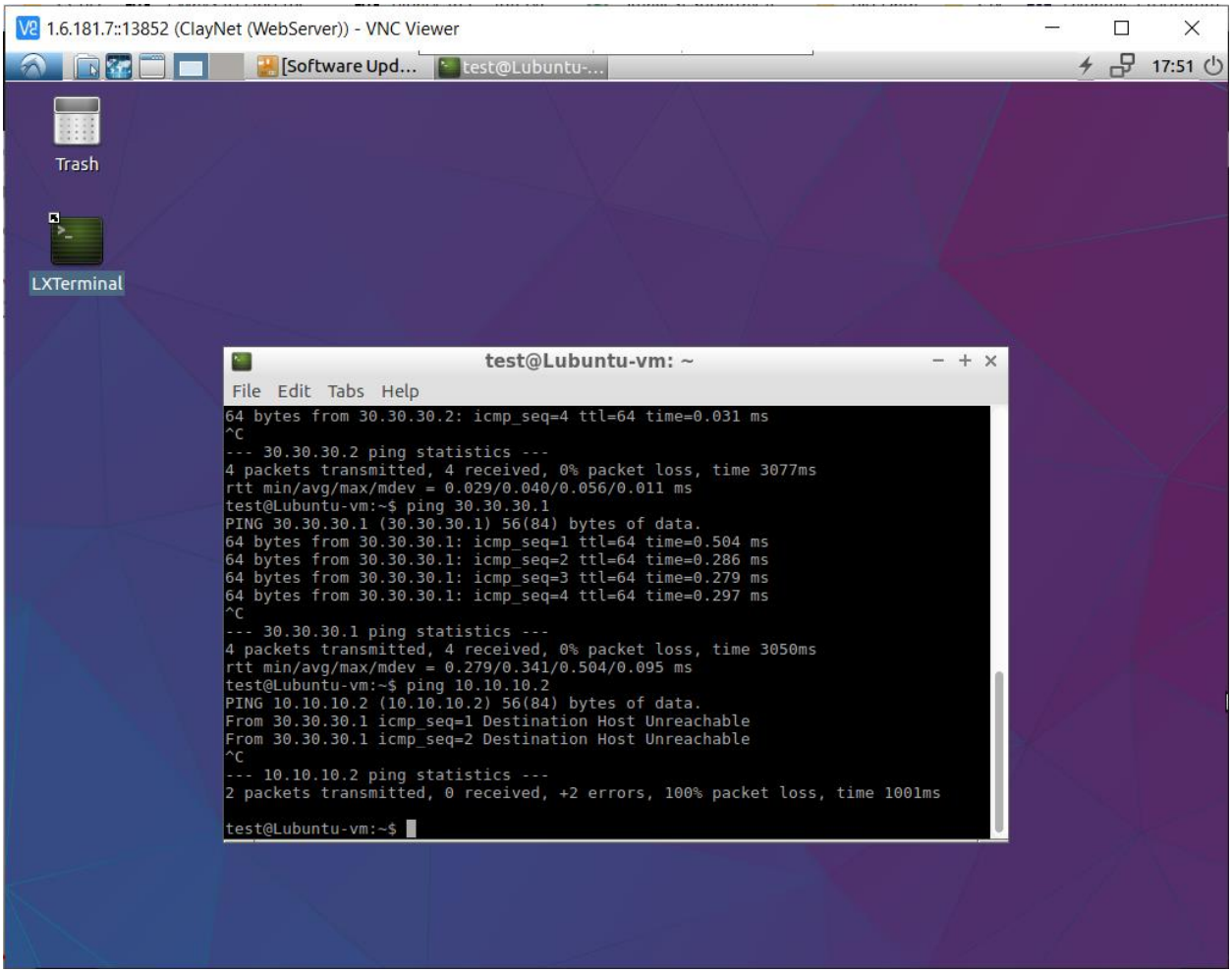
Topology 1:

Topology-

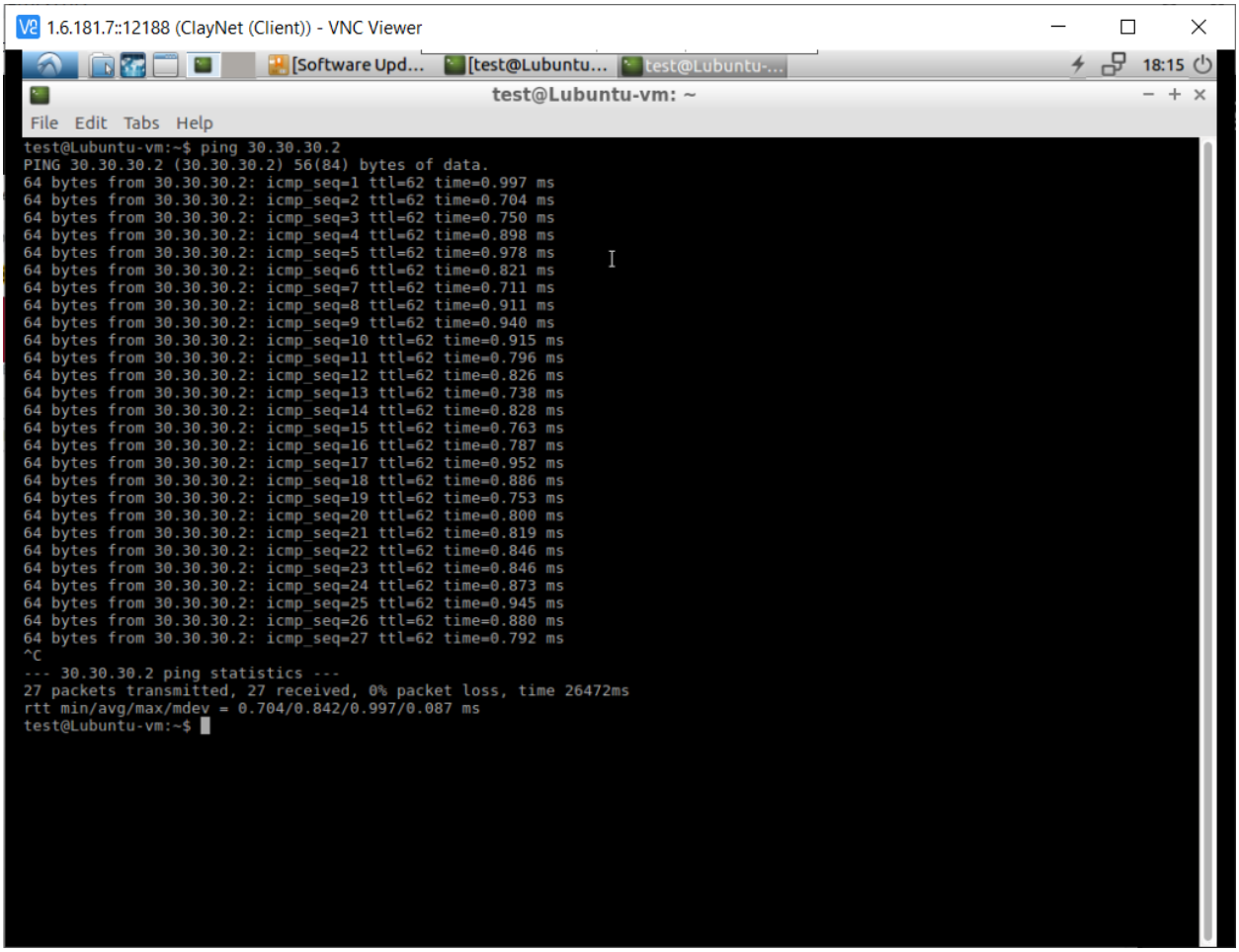
Pinging-

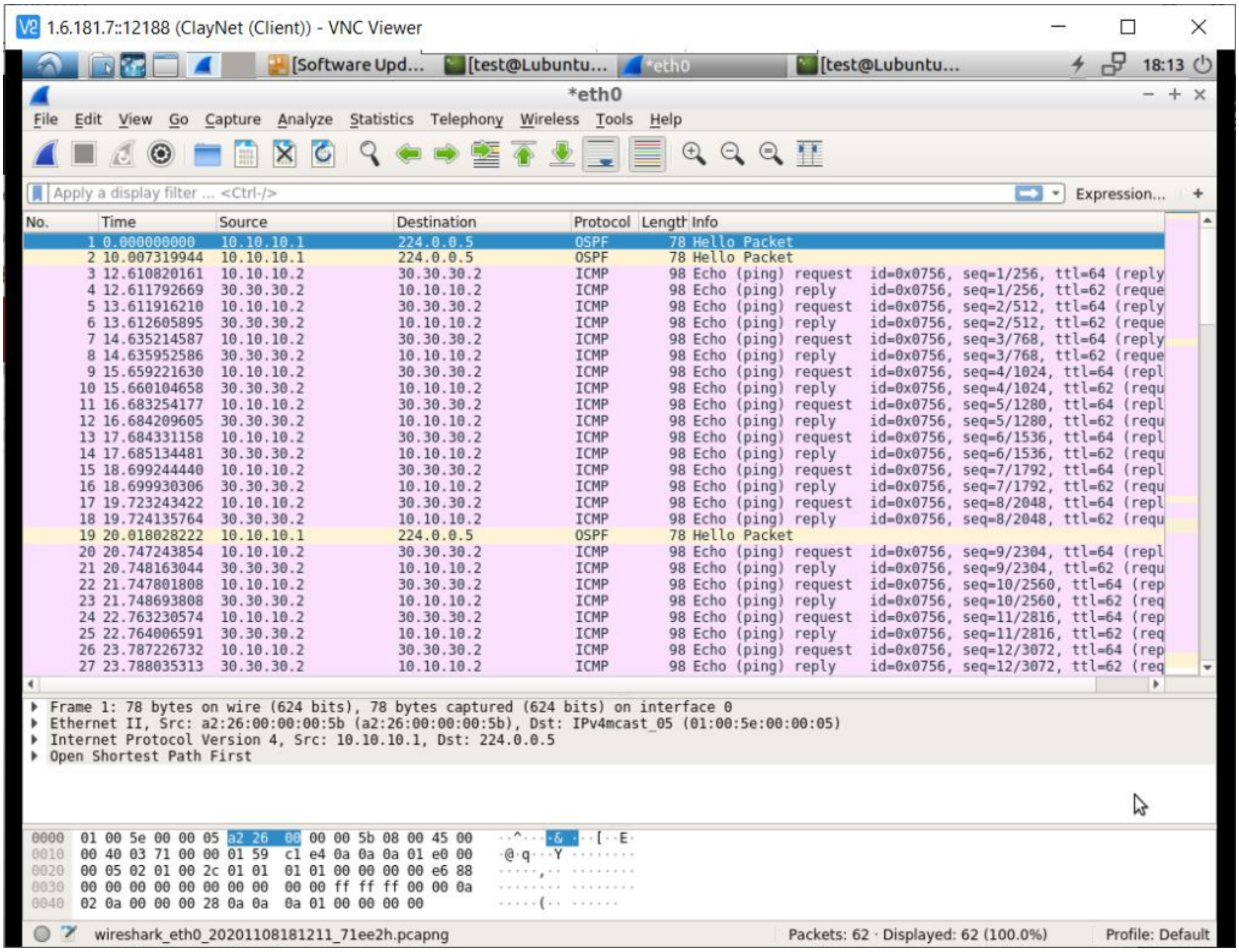
Web server-


1.6.181.7::13852 (ClayNet (WebServer)) - VNC Viewer
[Software Upd...
test@Lubuntu-...
17:50
Trash
LXTerminal
test@Lubuntu-vm: ~
File Edit Tabs Help
collisions:0 txqueuelen:1000
RX bytes:17670 (17.6 KB) TX bytes:17670 (17.6 KB)
test@Lubuntu-vm:~$ ping 30.30.30.2
PING 30.30.30.2 (30.30.30.2) 56(84) bytes of data.
64 bytes from 30.30.30.2: icmp_seq=1 ttl=64 time=0.056 ms
64 bytes from 30.30.30.2: icmp_seq=2 ttl=64 time=0.045 ms
64 bytes from 30.30.30.2: icmp_seq=3 ttl=64 time=0.029 ms
64 bytes from 30.30.30.2: icmp_seq=4 ttl=64 time=0.031 ms
^C
--- 30.30.30.2 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3077ms
rtt min/avg/max/mdev = 0.029/0.040/0.056/0.011 ms
test@Lubuntu-vm:~$ ping 30.30.30.1
PING 30.30.30.1 (30.30.30.1) 56(84) bytes of data.
64 bytes from 30.30.30.1: icmp_seq=1 ttl=64 time=0.504 ms
64 bytes from 30.30.30.1: icmp_seq=2 ttl=64 time=0.286 ms
64 bytes from 30.30.30.1: icmp_seq=3 ttl=64 time=0.279 ms
64 bytes from 30.30.30.1: icmp_seq=4 ttl=64 time=0.297 ms
^C
--- 30.30.30.1 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3050ms
rtt min/avg/max/mdev = 0.279/0.341/0.504/0.095 ms
test@Lubuntu-vm:~$


1.6.181.7::13852 (ClayNet (WebServer)) - VNC Viewer
[Software Upd...
test@Lubuntu-...
17:51
Trash
LXTerminal
test@Lubuntu-vm: ~
File Edit Tabs Help
64 bytes from 30.30.30.2: icmp_seq=4 ttl=64 time=0.031 ms
^C
--- 30.30.30.2 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3077ms
rtt min/avg/max/mdev = 0.029/0.040/0.056/0.011 ms
test@Lubuntu-vm:~$ ping 30.30.30.1
PING 30.30.30.1 (30.30.30.1) 56(84) bytes of data.
64 bytes from 30.30.30.1: icmp_seq=1 ttl=64 time=0.504 ms
64 bytes from 30.30.30.1: icmp_seq=2 ttl=64 time=0.286 ms
64 bytes from 30.30.30.1: icmp_seq=3 ttl=64 time=0.279 ms
64 bytes from 30.30.30.1: icmp_seq=4 ttl=64 time=0.297 ms
^C
--- 30.30.30.1 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3050ms
rtt min/avg/max/mdev = 0.279/0.341/0.504/0.095 ms
test@Lubuntu-vm:~$ ping 10.10.10.2
PING 10.10.10.2 (10.10.10.2) 56(84) bytes of data.
From 30.30.30.1 icmp_seq=1 Destination Host Unreachable
From 30.30.30.1 icmp_seq=2 Destination Host Unreachable
^C
--- 10.10.10.2 ping statistics ---
2 packets transmitted, 0 received, +2 errors, 100% packet loss, time 1001ms
test@Lubuntu-vm:~$

Client-


1.6.181.7::12188 (ClayNet (Client)) - VNC Viewer
[Software Upd...
[test@Lubuntu...
test@Lubuntu-...
18:15
test@Lubuntu-vm: ~
File Edit Tabs Help
test@Lubuntu-vm:~$ ping 30.30.30.2
PING 30.30.30.2 (30.30.30.2) 56(84) bytes of data.
64 bytes from 30.30.30.2: icmp_seq=1 ttl=62 time=0.997 ms
64 bytes from 30.30.30.2: icmp_seq=2 ttl=62 time=0.704 ms
64 bytes from 30.30.30.2: icmp_seq=3 ttl=62 time=0.750 ms
64 bytes from 30.30.30.2: icmp_seq=4 ttl=62 time=0.898 ms
64 bytes from 30.30.30.2: icmp_seq=5 ttl=62 time=0.978 ms
64 bytes from 30.30.30.2: icmp_seq=6 ttl=62 time=0.821 ms
64 bytes from 30.30.30.2: icmp_seq=7 ttl=62 time=0.711 ms
64 bytes from 30.30.30.2: icmp_seq=8 ttl=62 time=0.911 ms
64 bytes from 30.30.30.2: icmp_seq=9 ttl=62 time=0.940 ms
64 bytes from 30.30.30.2: icmp_seq=10 ttl=62 time=0.915 ms
64 bytes from 30.30.30.2: icmp_seq=11 ttl=62 time=0.796 ms
64 bytes from 30.30.30.2: icmp_seq=12 ttl=62 time=0.826 ms
64 bytes from 30.30.30.2: icmp_seq=13 ttl=62 time=0.738 ms
64 bytes from 30.30.30.2: icmp_seq=14 ttl=62 time=0.828 ms
64 bytes from 30.30.30.2: icmp_seq=15 ttl=62 time=0.763 ms
64 bytes from 30.30.30.2: icmp_seq=16 ttl=62 time=0.787 ms
64 bytes from 30.30.30.2: icmp_seq=17 ttl=62 time=0.952 ms
64 bytes from 30.30.30.2: icmp_seq=18 ttl=62 time=0.886 ms
64 bytes from 30.30.30.2: icmp_seq=19 ttl=62 time=0.753 ms
64 bytes from 30.30.30.2: icmp_seq=20 ttl=62 time=0.800 ms
64 bytes from 30.30.30.2: icmp_seq=21 ttl=62 time=0.819 ms
64 bytes from 30.30.30.2: icmp_seq=22 ttl=62 time=0.846 ms
64 bytes from 30.30.30.2: icmp_seq=23 ttl=62 time=0.846 ms
64 bytes from 30.30.30.2: icmp_seq=24 ttl=62 time=0.873 ms
64 bytes from 30.30.30.2: icmp_seq=25 ttl=62 time=0.945 ms
64 bytes from 30.30.30.2: icmp_seq=26 ttl=62 time=0.880 ms
64 bytes from 30.30.30.2: icmp_seq=27 ttl=62 time=0.792 ms
^C
--- 30.30.30.2 ping statistics ---
27 packets transmitted, 27 received, 0% packet loss, time 26472ms
rtt min/avg/max/mdev = 0.704/0.842/0.997/0.087 ms
test@Lubuntu-vm:~$



Observations:

• How many hops will client take to reach the server?

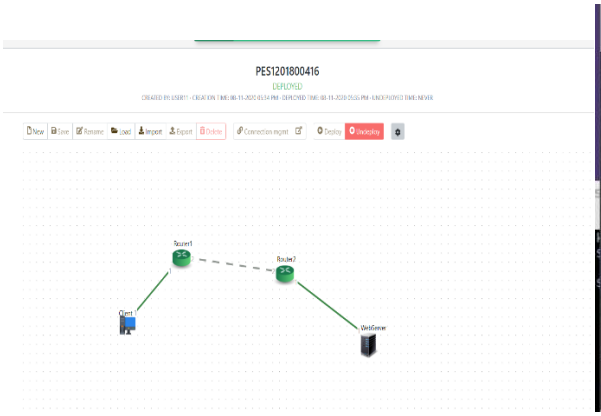
It takes three hops.

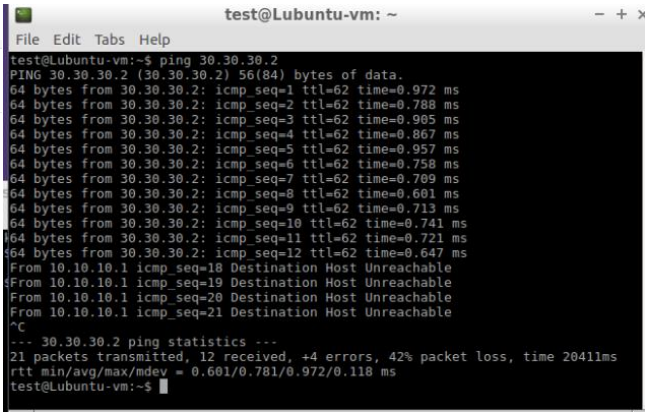
• Observe the RTT and justify your observation.

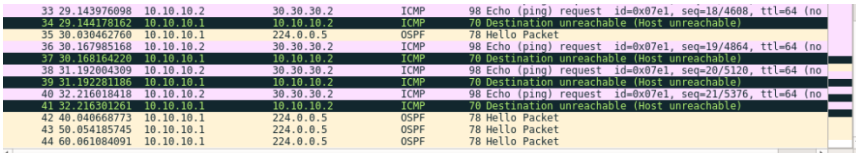
0.842 ms is the average RTT. The number of hops are few, hence the RTT is also low.

• While pinging, cut the link between Router1 and Router3. What will happen now?

We get a message saying ‘Destination host unreachable’.


PES1201800416
DEPLOYED
Router1
Router2
Client
WebServer


test@Lubuntu-vm: ~
File Edit Tabs Help
test@Lubuntu-vm:~$ ping 30.30.30.2
PING 30.30.30.2 (30.30.30.2) 56(84) bytes of data.
64 bytes from 30.30.30.2: icmp_seq=1 ttl=62 time=0.972 ms
64 bytes from 30.30.30.2: icmp_seq=2 ttl=62 time=0.788 ms
64 bytes from 30.30.30.2: icmp_seq=3 ttl=62 time=0.905 ms
64 bytes from 30.30.30.2: icmp_seq=4 ttl=62 time=0.867 ms
64 bytes from 30.30.30.2: icmp_seq=5 ttl=62 time=0.957 ms
64 bytes from 30.30.30.2: icmp_seq=6 ttl=62 time=0.758 ms
64 bytes from 30.30.30.2: icmp_seq=7 ttl=62 time=0.709 ms
64 bytes from 30.30.30.2: icmp_seq=8 ttl=62 time=0.601 ms
64 bytes from 30.30.30.2: icmp_seq=9 ttl=62 time=0.713 ms
64 bytes from 30.30.30.2: icmp_seq=10 ttl=62 time=0.741 ms
64 bytes from 30.30.30.2: icmp_seq=11 ttl=62 time=0.721 ms
64 bytes from 30.30.30.2: icmp_seq=12 ttl=62 time=0.647 ms
From 10.10.10.1 icmp_seq=18 Destination Host Unreachable
From 10.10.10.1 icmp_seq=19 Destination Host Unreachable
From 10.10.10.1 icmp_seq=20 Destination Host Unreachable
From 10.10.10.1 icmp_seq=21 Destination Host Unreachable
^C
--- 30.30.30.2 ping statistics ---
21 packets transmitted, 12 received, +4 errors, 42% packet loss, time 20411ms
rtt min/avg/max/mdev = 0.601/0.781/0.972/0.118 ms
test@Lubuntu-vm:~$


33 29.143976098 10.10.10.2 30.30.30.2 ICMP 98 Echo (ping) request id=0x07e1, seq=18/4608, ttl=64 (no
34 29.144178162 10.10.10.1 10.10.10.2 ICMP 70 Destination unreachable (Host unreachable)
35 30.030462760 10.10.10.1 224.0.0.5 OSPF 78 Hello Packet
36 30.167985168 10.10.10.2 30.30.30.2 ICMP 98 Echo (ping) request id=0x07e1, seq=19/4864, ttl=64 (no
37 30.168164220 10.10.10.1 10.10.10.2 ICMP 70 Destination unreachable (Host unreachable)
38 31.192004309 10.10.10.2 30.30.30.2 ICMP 98 Echo (ping) request id=0x07e1, seq=20/5120, ttl=64 (no
39 31.192281186 10.10.10.1 10.10.10.2 ICMP 70 Destination unreachable (Host unreachable)
40 32.216018418 10.10.10.2 30.30.30.2 ICMP 98 Echo (ping) request id=0x07e1, seq=21/5376, ttl=64 (no
41 32.216301261 10.10.10.1 10.10.10.2 ICMP 70 Destination unreachable (Host unreachable)
42 40.040668773 10.10.10.1 224.0.0.5 OSPF 78 Hello Packet
43 50.054185745 10.10.10.1 224.0.0.5 OSPF 78 Hello Packet
44 60.061084091 10.10.10.1 224.0.0.5 OSPF 78 Hello Packet