COMPUTER NETWORKS LAB

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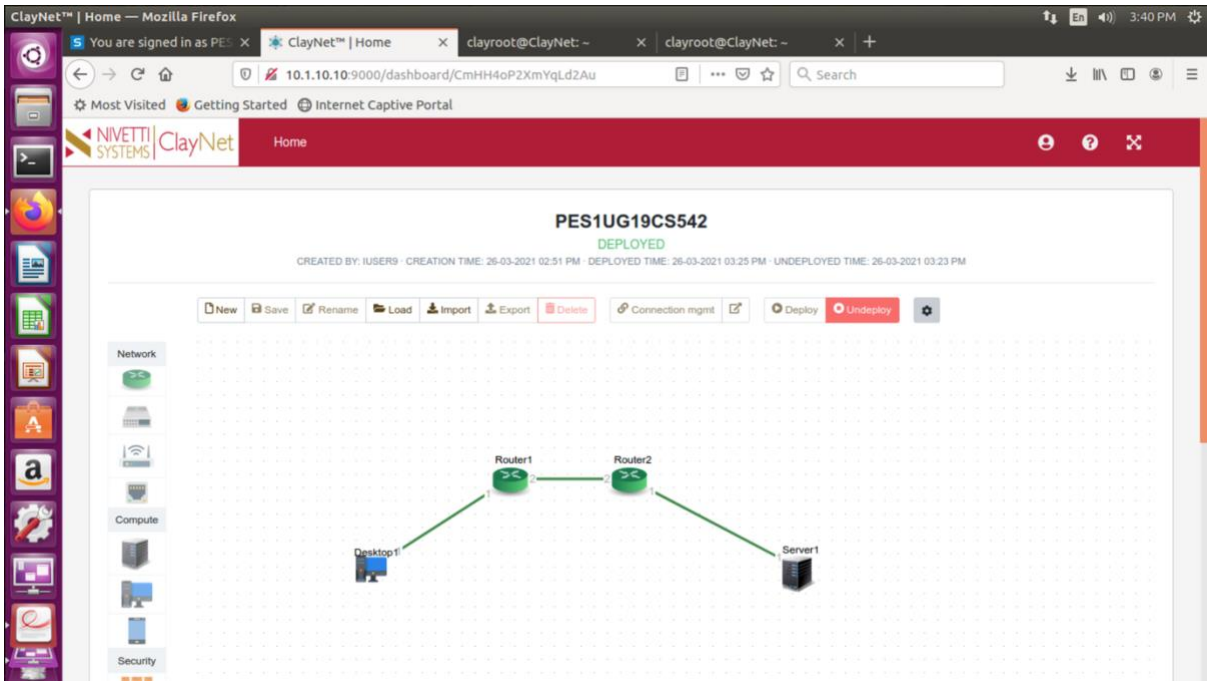
SECTION : I

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

TOPOLOGY



Configuring the End Systems :-

END SYSTEM	IP ADDRESS	GATEWAY
Desktop1	10.10.10.2/24	10.10.10.1
Server1	30.30.30.2/24	30.30.30.1

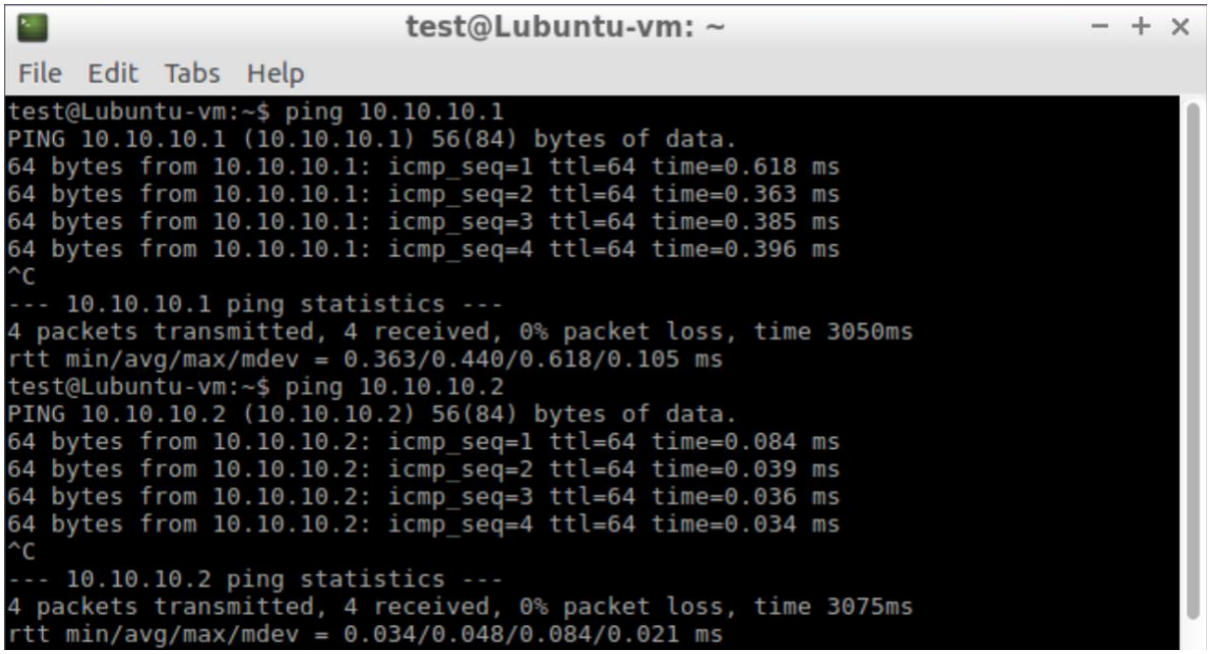
Configuring the Routers :-

ROUTER	INTERFACE NUMBER (port)	IP ADDRESS
Router1	1	10.10.10.1/24
Router1	2	20.20.20.1/24
Router2	1	30.30.30.1/24
Router2	2	20.20.20.2/24

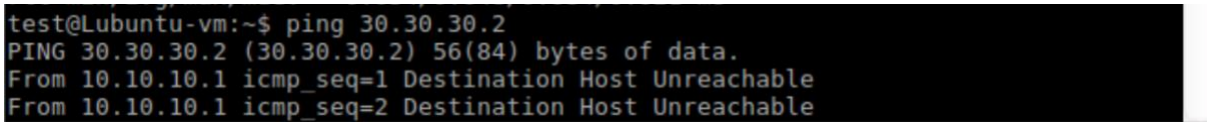
PINGING

Pinging from the client:-

1) ping 10.10.10.1 & ping 10.10.10.2



2) ping 30.30.30.2

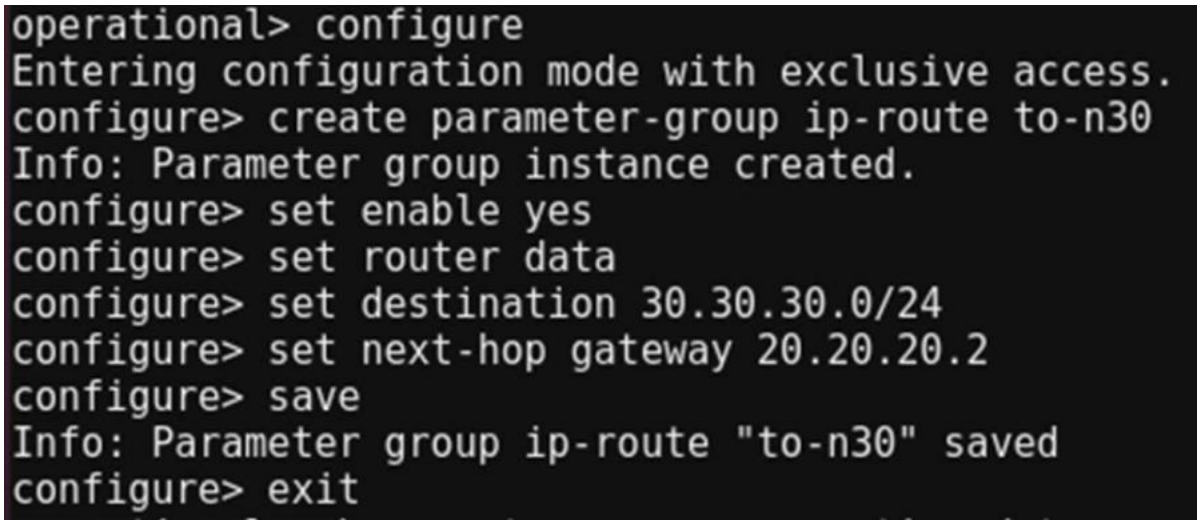


Ping is not successful, and “Destination Host Unreachable” status is displayed. This happens because the routing table entries have not been made yet.

The following routing table entries need to be made :-

ROUTERS	DESTINATION	NXT HOP GATEWAY	VIA
Router1	30.30.30.0	20.20.20.2	Direct
Router2	10.10.10.0	20.20.20.1	Direct

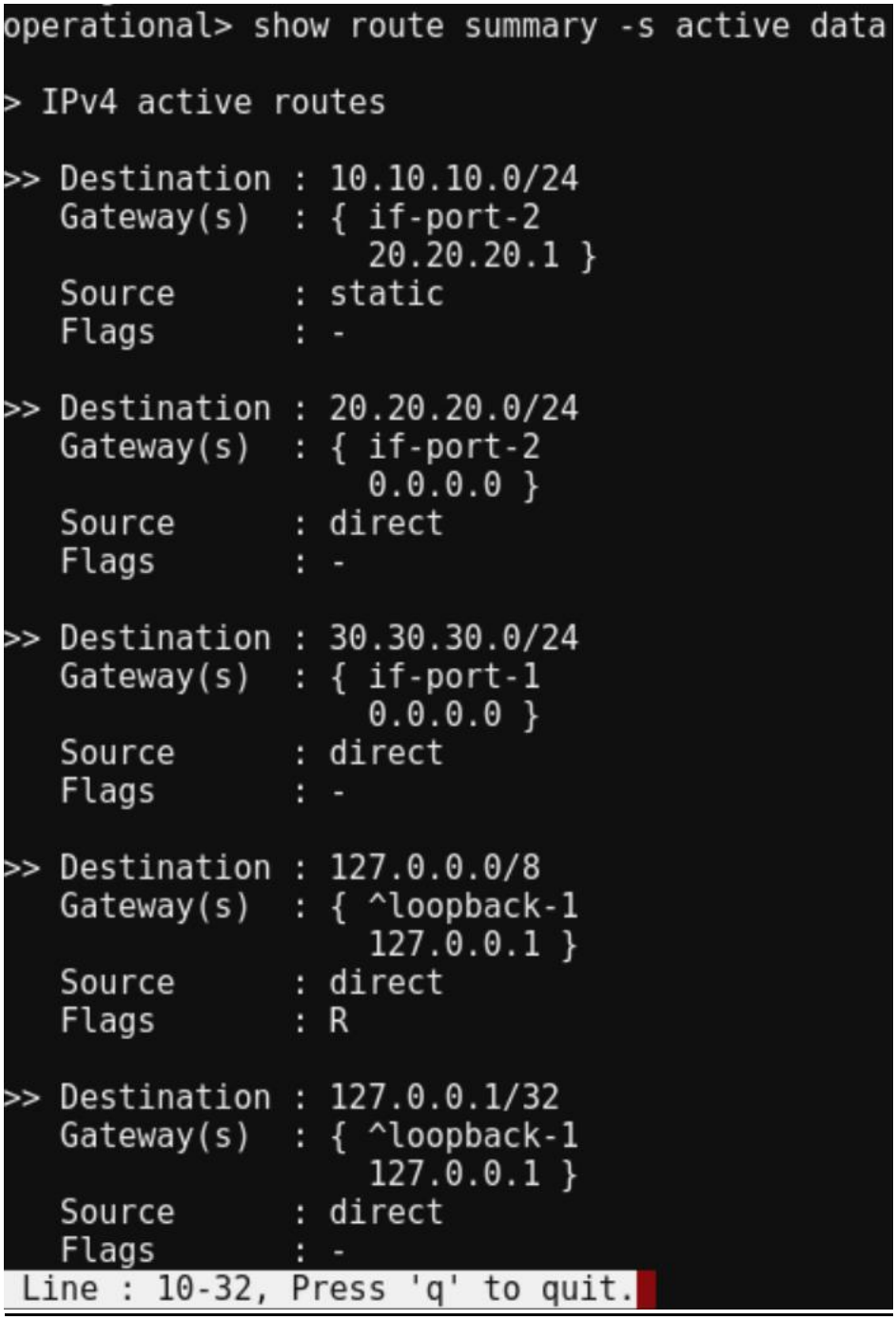
Adding Routing Table entries for Router1 :-



```
> IPv4 active routes

>> Destination : 10.10.10.0/24
   Gateway(s)  : { if-port-1
                   0.0.0.0 }
   Source      : direct
   Flags       : -

>> Destination : 20.20.20.0/24
   Gateway(s)  : { if-port-2
                   0.0.0.0 }
   Source      : direct
   Flags       : -

>> Destination : 30.30.30.0/24
   Gateway(s)  : { if-port-2
                   20.20.20.2 }
   Source      : static
   Flags       : -

>> Destination : 127.0.0.0/8
   Gateway(s)  : { ^loopback-1
                   127.0.0.1 }
   Source      : direct
   Flags       : R

>> Destination : 127.0.0.1/32
   Gateway(s)  : { ^loopback-1
                   127.0.0.1 }
   Source      : direct
   Flags       : -

 Total number of IPv4 active routes displayed : 5
 Line : 12-34, Press 'q' to quit.
```

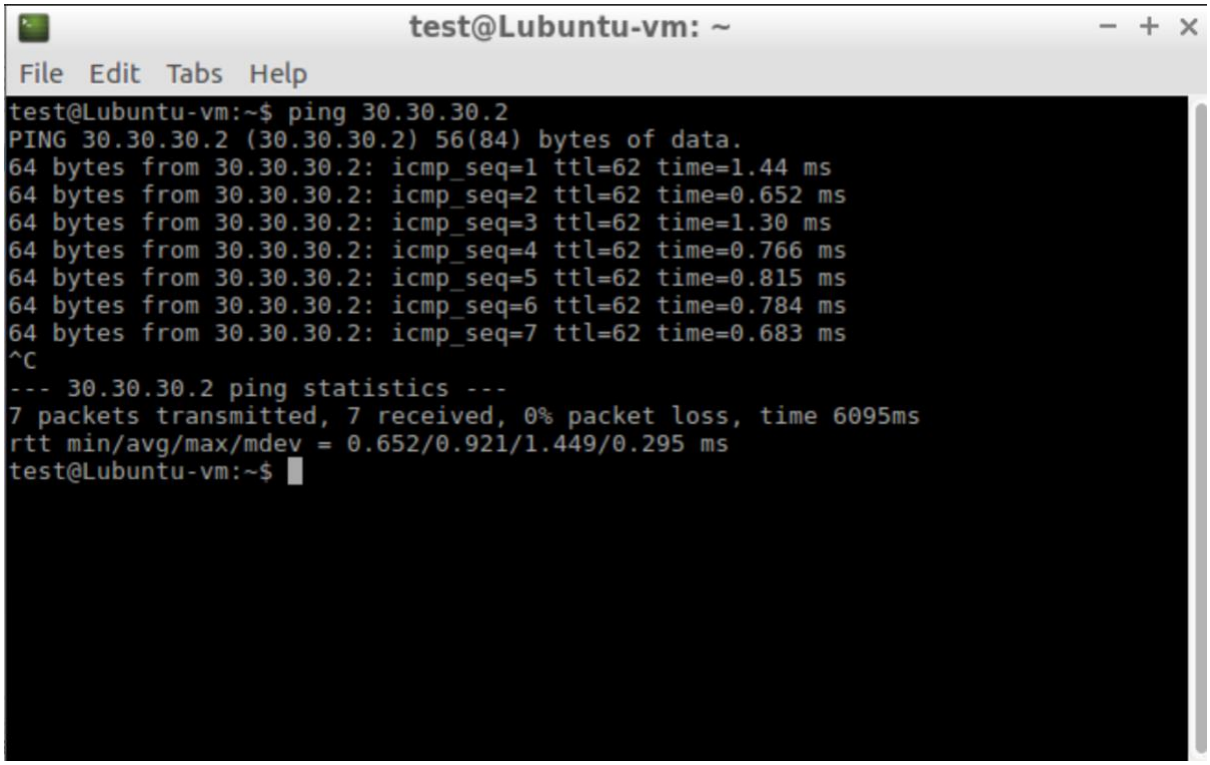
Adding Routing Table entries for Router2 :-

```
operational> configure
Entering configuration mode with exclusive access.
configure> create parameter-group ip-route to-n10
Info: Parameter group instance created.
configure> set enable yes
configure> set router data
configure> set destination 10.10.10.0/24
configure> set next-hop gateway 20.20.20.1
configure> save
Info: Parameter group ip-route "to-n10" saved
configure> exit
```

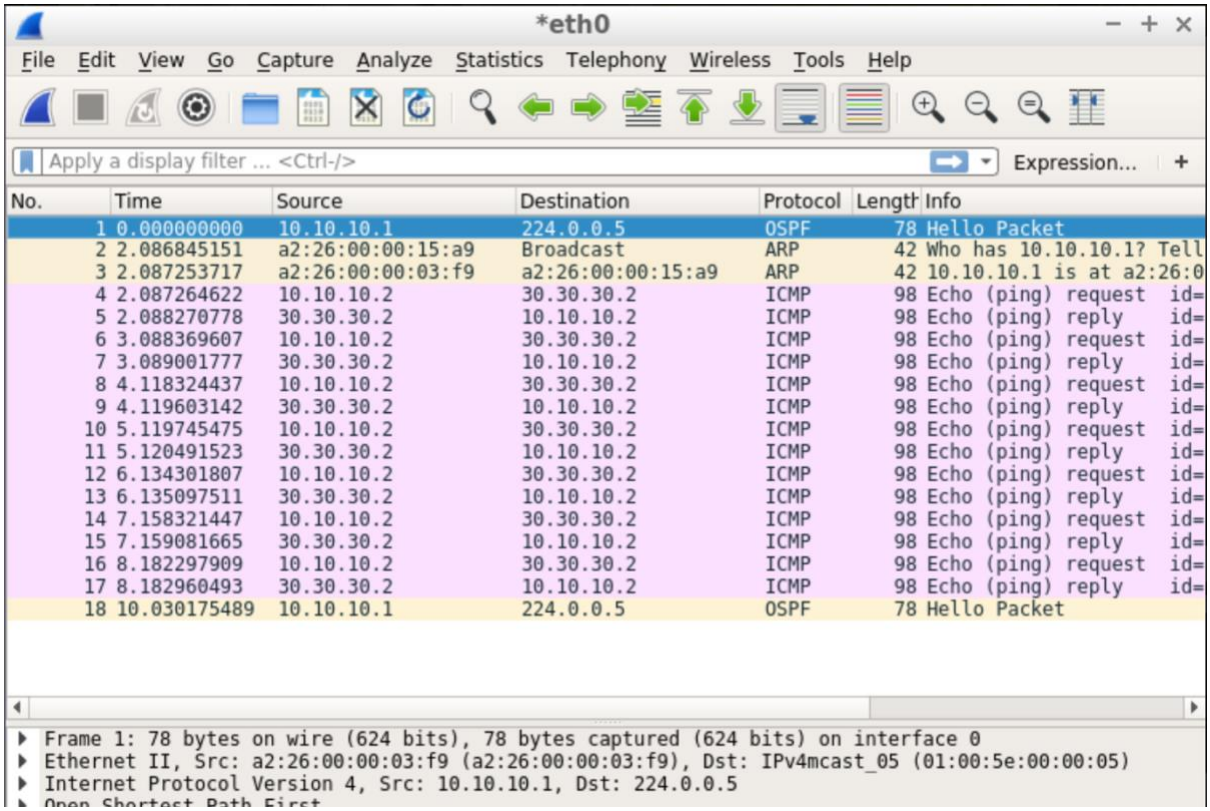


FINAL PINGING

Now the pinging from the client to the 30.30.30.2 is performed again and this time it is successful, because the routing table entries have been made.



Observation :- Now the Client is able to ping the server. And the ttl value is reduced to 62 because of two hops.



Wireshark packet capture

Observation :- ICMP request packets are sent from client to the server.