CN Lab Report Week 8

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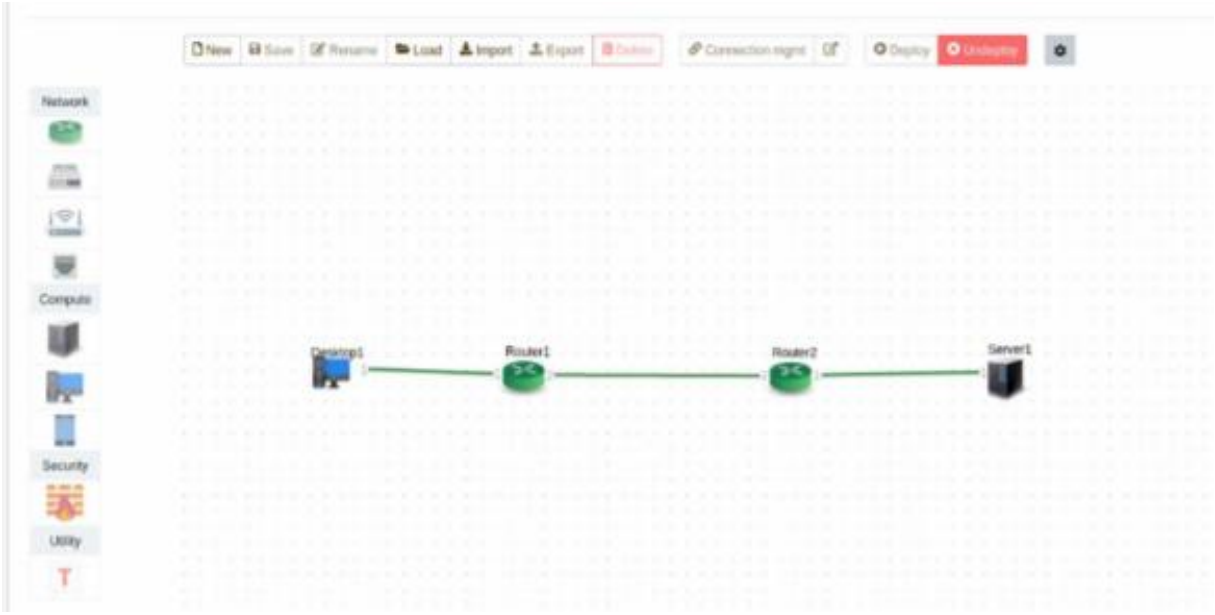
1. IPv4 Addressing and Topology Creation

The following topology is created and deployed on ClayNet.



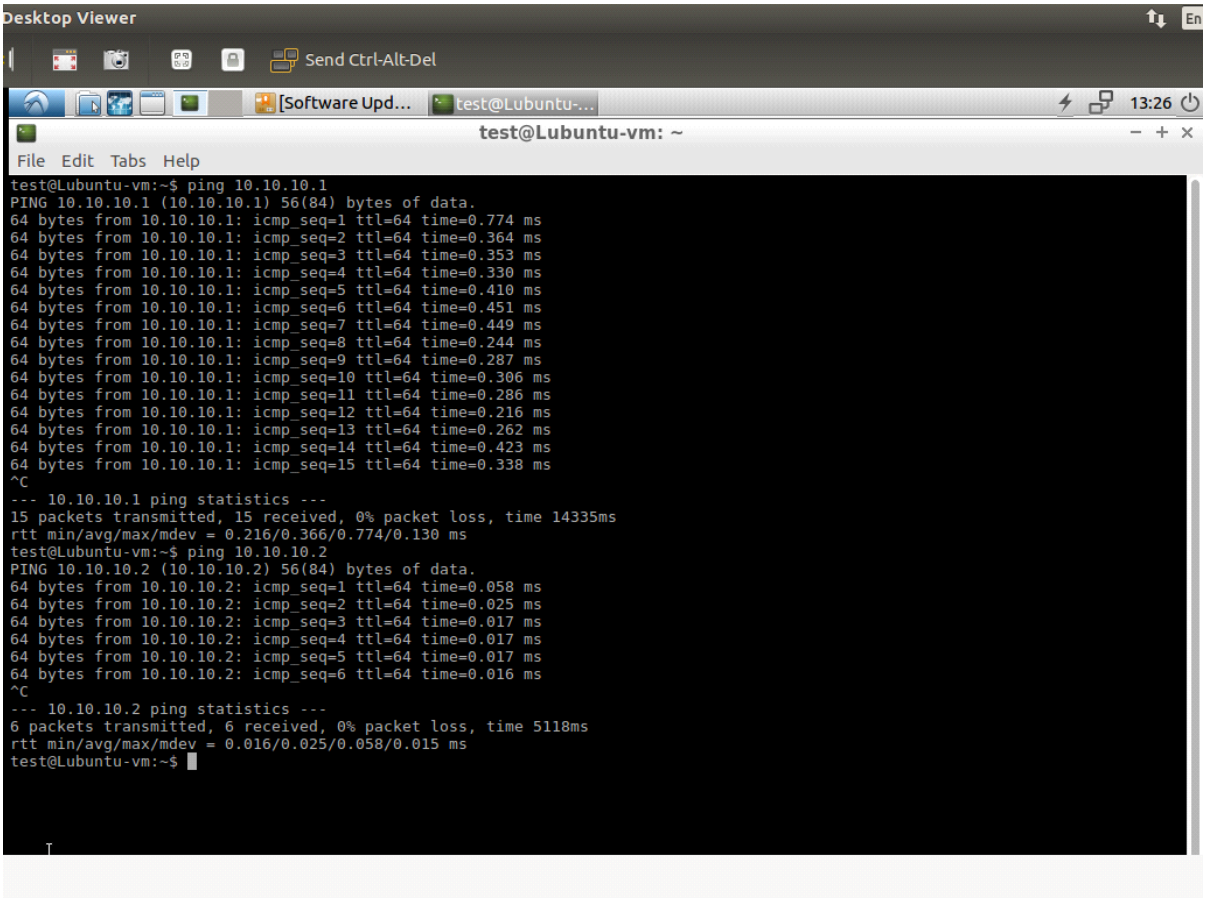
The configuration of all the end-system devices is shown below.

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

Similarly, the routers are configured in the same manner.

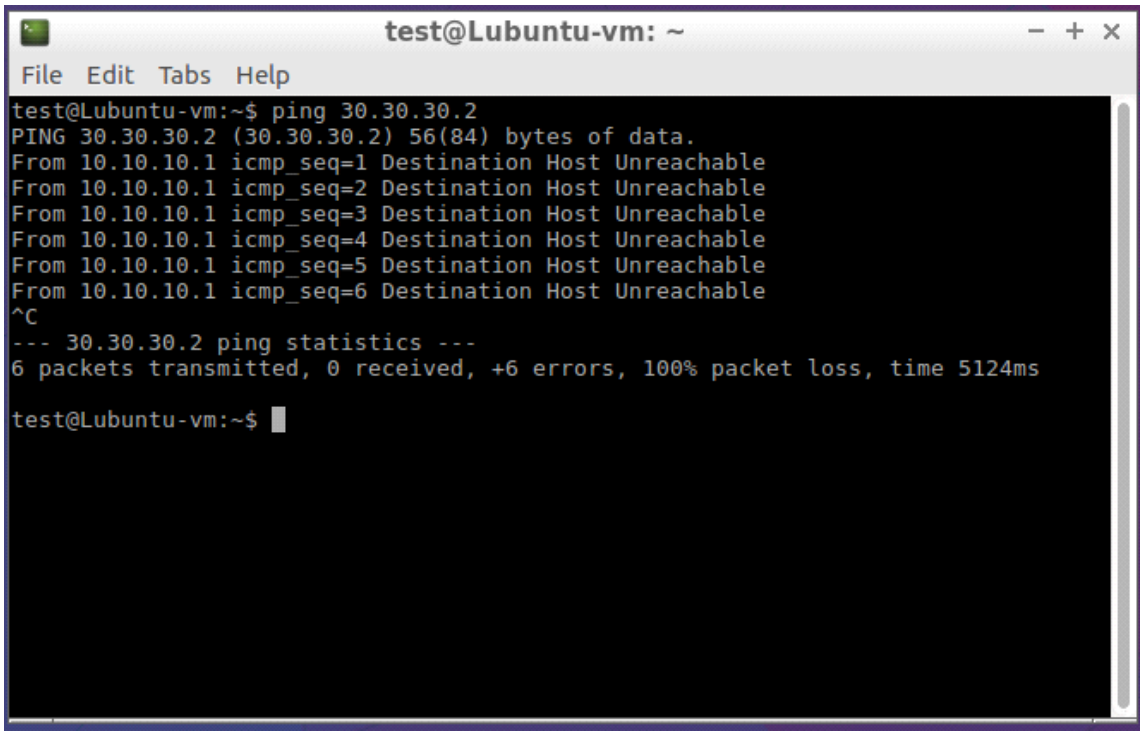
Router	Interface Number (port)	IP Address
Router1	1	10.10.10.1/24

Router1	2	20.20.20.1/24
Router2	1	30.30.30.1/24
Router2	2	20.20.20.2/24



2. Ping Command

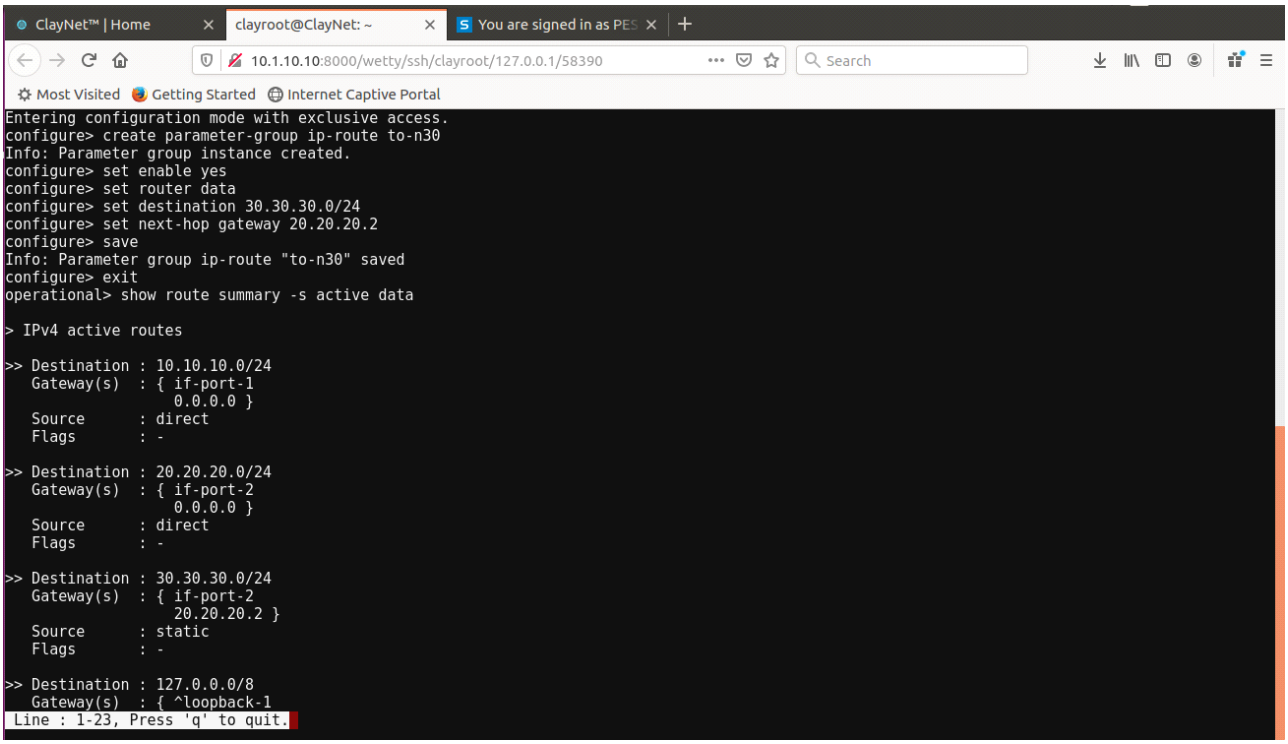
From Desktop1, a ping command is made to Server1.
However, this ping command fails because the routing table entries have not been configured yet for Router1 and Router2.
We obtain a Destination Host Unreachable status.



3. Configuration of Routing Table Entries

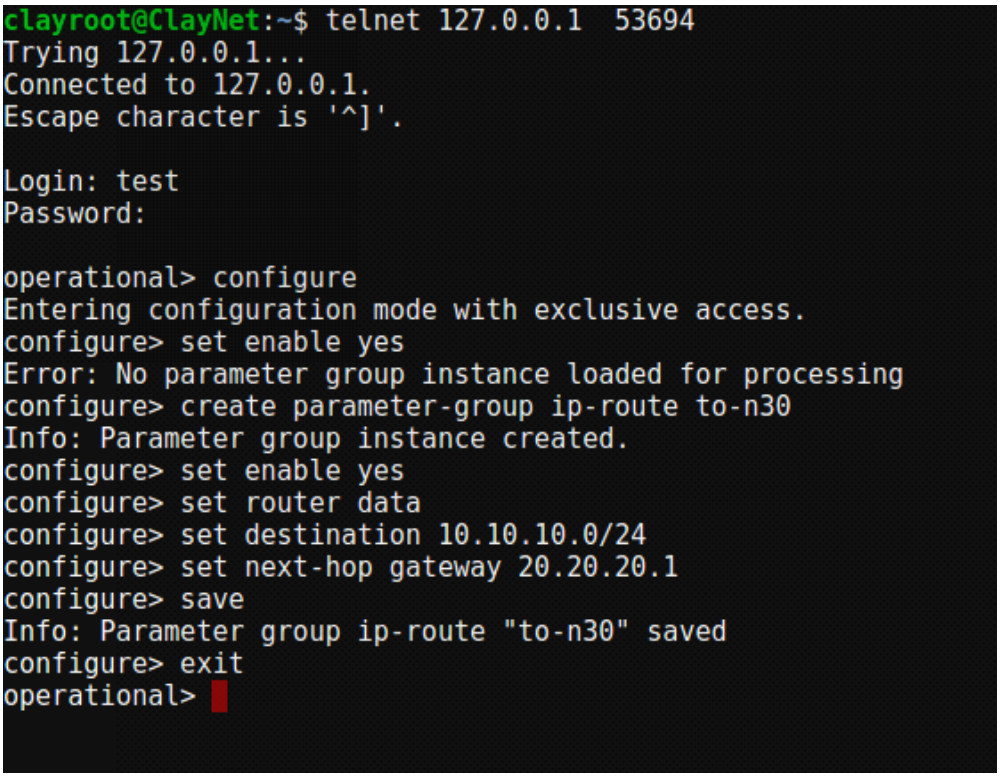
3.1 Router 1

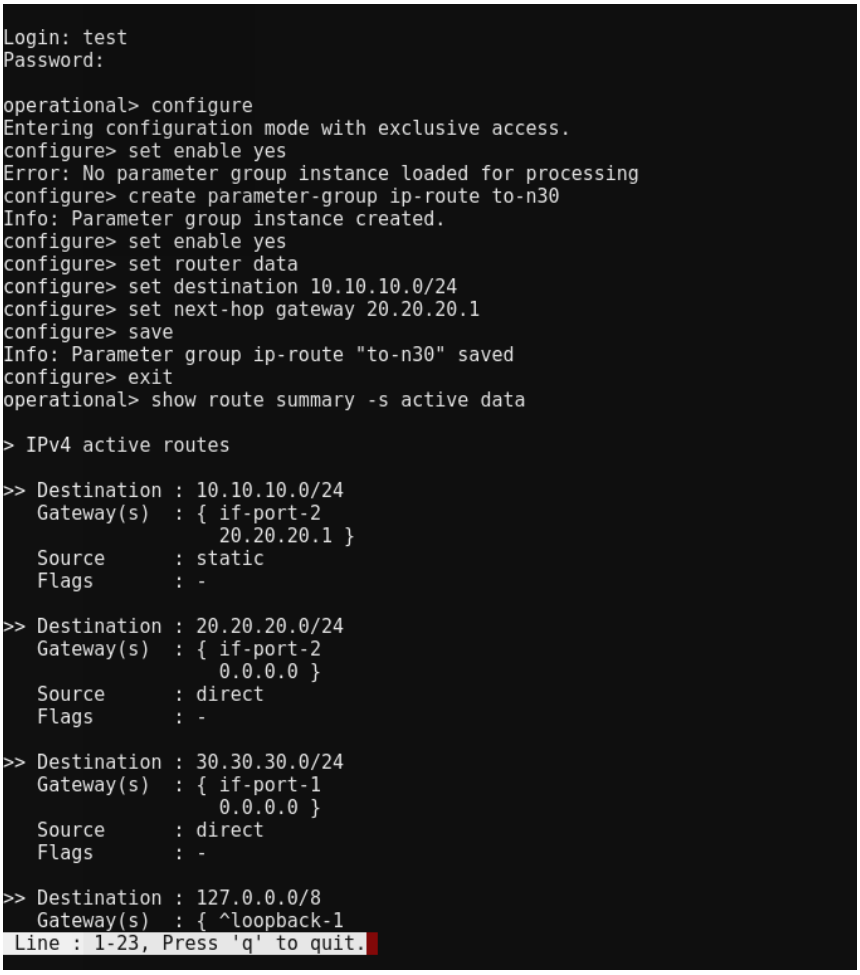
The Routing Table entries for Router 1 are configured using the below commands in the console window.



3.1 Router 2

The Routing Table entries for Router 2 are configured using the below commands in the console window.

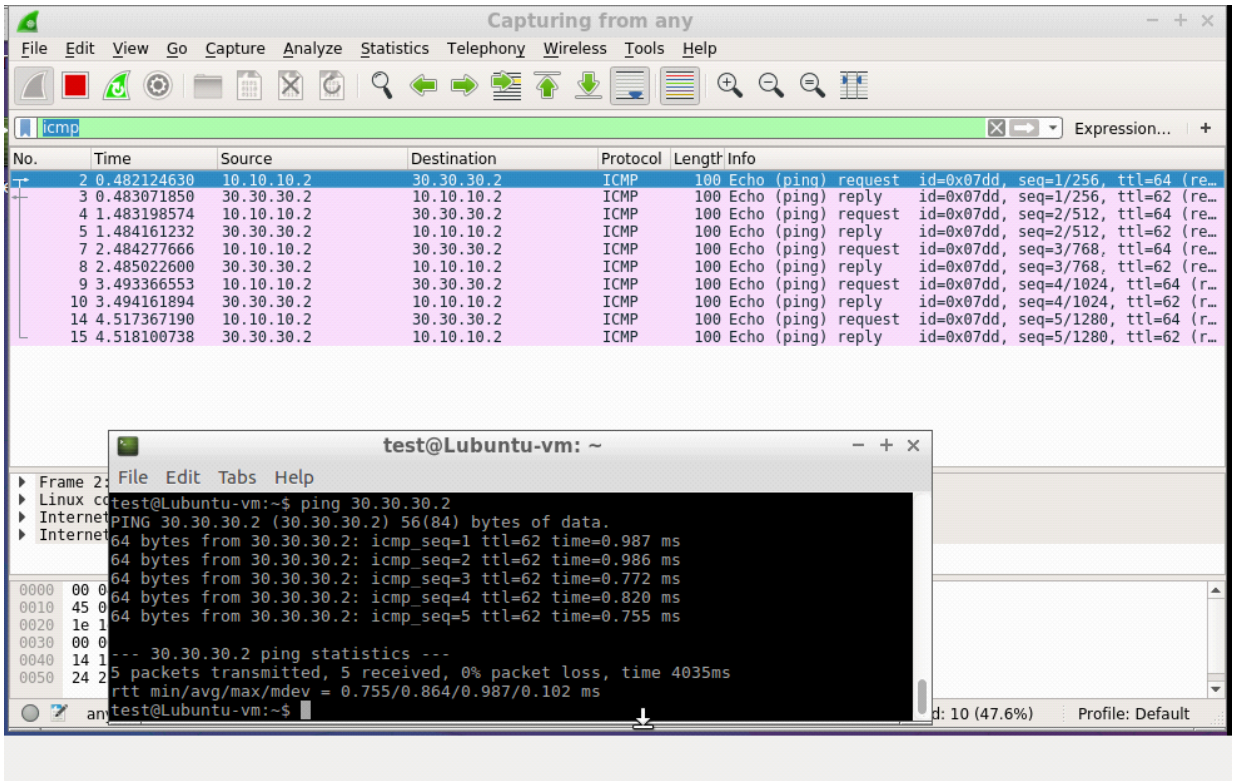




4. Observations

Desktop1 and Server1 are now reachable from each other.
To verify this, the ping command is again used to ICMP request packets to the other.
Since there are 2 hops between the systems, the TTL value is decremented by 2. Hence the value is decremented from its default value of 64 to 62

The following Wireshark Packet Capture shows ICMP request packets being sent from Desktop1 to Server1.


Capturing from any
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
icmp
Expression...
No. Time Source Destination Protocol Length Info
2 0.482124630 10.10.10.2 30.30.30.2 ICMP 100 Echo (ping) request id=0x07dd, seq=1/256, ttl=64 (re…
3 0.483071850 30.30.30.2 10.10.10.2 ICMP 100 Echo (ping) reply id=0x07dd, seq=1/256, ttl=62 (re…
4 1.483198574 10.10.10.2 30.30.30.2 ICMP 100 Echo (ping) request id=0x07dd, seq=2/512, ttl=64 (re…
5 1.484161232 30.30.30.2 10.10.10.2 ICMP 100 Echo (ping) reply id=0x07dd, seq=2/512, ttl=62 (re…
7 2.484277666 10.10.10.2 30.30.30.2 ICMP 100 Echo (ping) request id=0x07dd, seq=3/768, ttl=64 (re…
8 2.485022600 30.30.30.2 10.10.10.2 ICMP 100 Echo (ping) reply id=0x07dd, seq=3/768, ttl=62 (re…
9 3.493366553 10.10.10.2 30.30.30.2 ICMP 100 Echo (ping) request id=0x07dd, seq=4/1024, ttl=64 (r…
10 3.494161894 30.30.30.2 10.10.10.2 ICMP 100 Echo (ping) reply id=0x07dd, seq=4/1024, ttl=62 (r…
14 4.517367190 10.10.10.2 30.30.30.2 ICMP 100 Echo (ping) request id=0x07dd, seq=5/1280, ttl=64 (r…
15 4.518100738 30.30.30.2 10.10.10.2 ICMP 100 Echo (ping) reply id=0x07dd, seq=5/1280, ttl=62 (r…
Frame 2:
Linux co
Internet
Internet
0000 00 0
0010 45 0
0020 1e 1
0030 00 0
0040 14 1
0050 24 2
Profile: Default
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=0.987 ms
64 bytes from 30.30.30.2: icmp_seq=2 ttl=62 time=0.986 ms
64 bytes from 30.30.30.2: icmp_seq=3 ttl=62 time=0.772 ms
64 bytes from 30.30.30.2: icmp_seq=4 ttl=62 time=0.820 ms
64 bytes from 30.30.30.2: icmp_seq=5 ttl=62 time=0.755 ms
--- 30.30.30.2 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4035ms
rtt min/avg/max/mdev = 0.755/0.864/0.987/0.102 ms
test@Lubuntu-vm:~$