CCN - Assignment

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Q1. Basic client-server application with a data rate of 50mbps, 5ms delay.

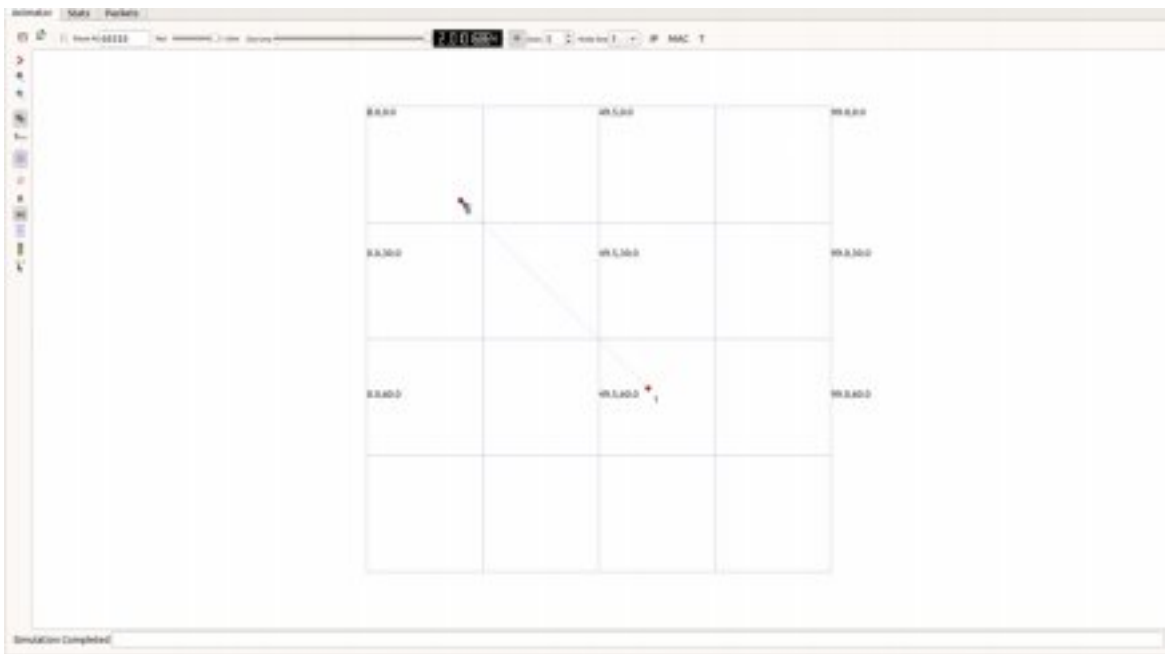
Assume the server port number to be 32.

The Output for the above is:

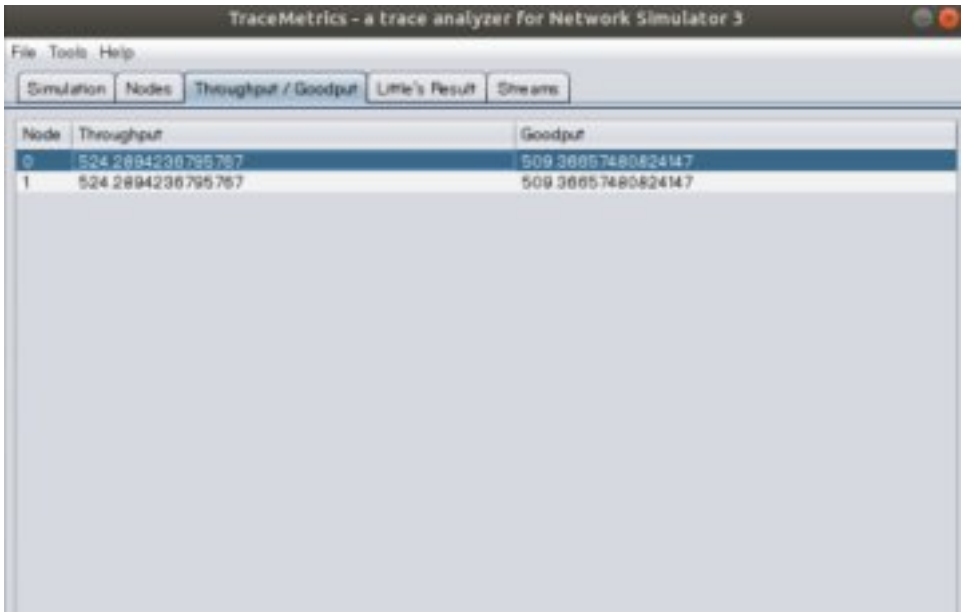
```
Chandu@kiran: ~/Desktop/ns-allinone-3.33/ns-3.33 >  ./waf --run scratch/First.cc
Waf: Entering directory `/home/karalius/Desktop/ns-allinone-3.33/ns-3.33/build'
Waf: Leaving directory `/home/karalius/Desktop/ns-allinone-3.33/ns-3.33/build'
Build commands will be stored in build/compile_commands.json
'build' finished successfully (1.008s)
AnimationInterface WARNING:Node:0 Does not have a mobility model. Use SetConstantPosition if it is
 stationary
AnimationInterface WARNING:Node:1 Does not have a mobility model. Use SetConstantPosition if it is
 stationary
AnimationInterface WARNING:Node:0 Does not have a mobility model. Use SetConstantPosition if it is
 stationary
AnimationInterface WARNING:Node:1 Does not have a mobility model. Use SetConstantPosition if it is
 stationary
At time +2s client sent 1024 bytes to 10.1.1.2 port 32
At time +2.00517s server received 1024 bytes from 10.1.1.1 port 49153
At time +2.00517s server sent 1024 bytes to 10.1.1.1 port 49153
At time +2.01034s client received 1024 bytes from 10.1.1.2 port 32
```

Q2. Nodes are taken at (20,20) and (60,60).

NetAnim simulation:



***Trace metrics* illustrating Throughput/Goodput :**



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Q3.

Pcap analysis with the help of tcpdump tool and illustration in the Wireshark

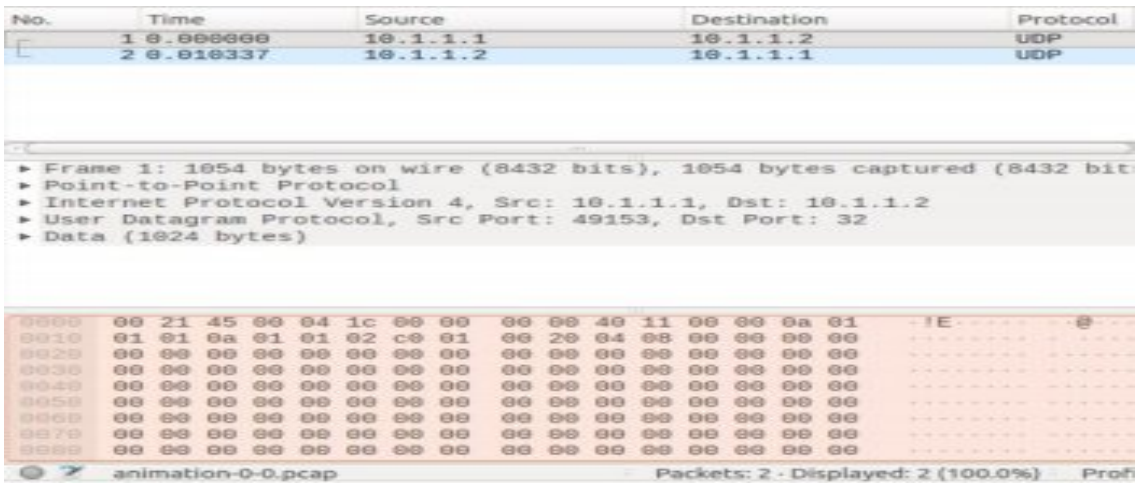
```
Chandu@kiran: ~/Desktop/ns-allinone-3.33 >  tcpdump  -nn -tt -r animation-0-0.pcap
reading from file animation-0-0.pcap, link-type PPP (PPP)
2.000000 IP 10.1.1.1.49153 > 10.1.1.2.32: UDP, length 1024
2.010337 IP 10.1.1.2.32 > 10.1.1.1.49153: UDP, length 1024

Chandu@kiran: ~/Desktop/ns-allinone-3.33 >  tcpdump  -nn -tt -r animation-1-0.pcap
reading from file animation-1-0.pcap, link-type PPP (PPP)
2.005168 IP 10.1.1.1.49153 > 10.1.1.2.32: UDP, length 1024
2.005168 IP 10.1.1.2.32 > 10.1.1.1.49153: UDP, length 1024
```

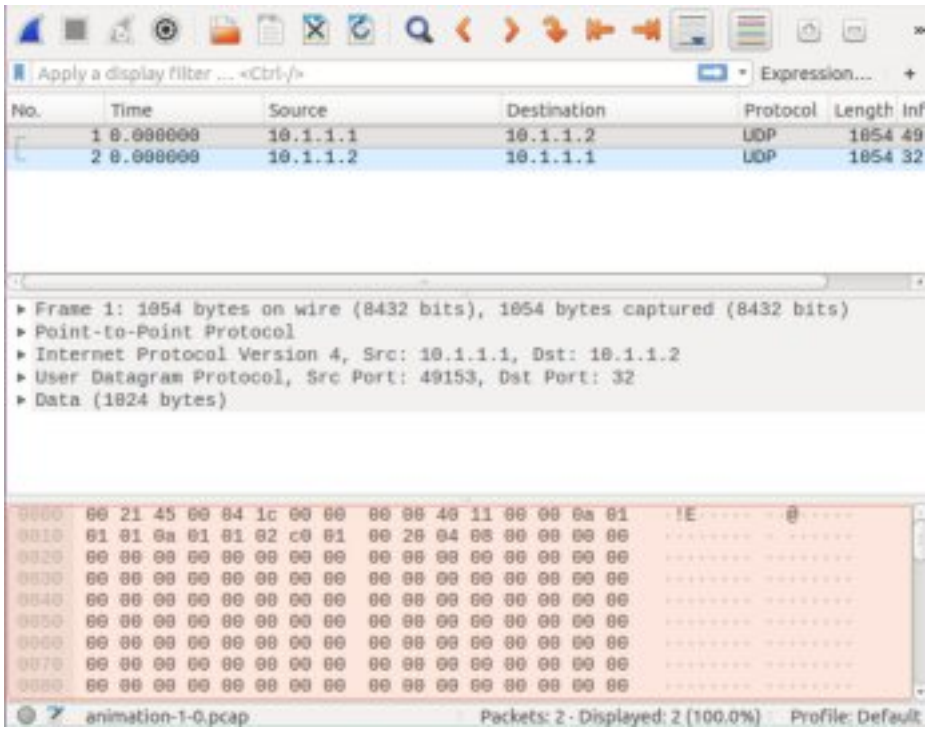
➢ In pcap analysis we get different .pcap files for client and server.

➢ We need to analyse individually for client and server for this pcap analysis.

Pcap Analysis for Client:



Pcap Analysis for Server:



Summary:

➔ In this Assignment we implemented a basic client-server program and simulated with ns3 simulator.

➔ Through NS3 simulator we get a clear-cut picture of the simulation.

➔ With help of trace metrics we analysed the Throughput / Goodput of our program.

➔ Wireshark(Packet sniffer tool) is used here to analyse IP address of source,destination and port number, type of protocol, etc. of that packet.