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Assignment B1

* Title: Study of Network Simulation
* Objectives: · To learn & understand network simulation NS2.
* Problem Statement: Study of any network simulation tools to create a network with three nodes & establish a TCP connection between node 0 & node 1 such that node 0 will send TCP packet to node 2 via node 1.
* Theory:

Network Simulator:

- A network simulator is a software that predicts the behaviour of computer network
- In simulators, the computer network is modeled with devices, links, applications, etc & the performance is analysed.

Types of network Simulator:

1. Commercial & Open Source simulators.

Commercial: OPNET, QualNET

Open Source: NS2, NS3, OMNeT++, SSFNet, J-Sim

2. Simple vs Complex:

→ Simple network simulators enable users to represent a network topology, specifying the nodes on network, the links between those nodes & traffic betn the nodes.

→ Complex allow the user to specify everything about the protocols used to process traffic.

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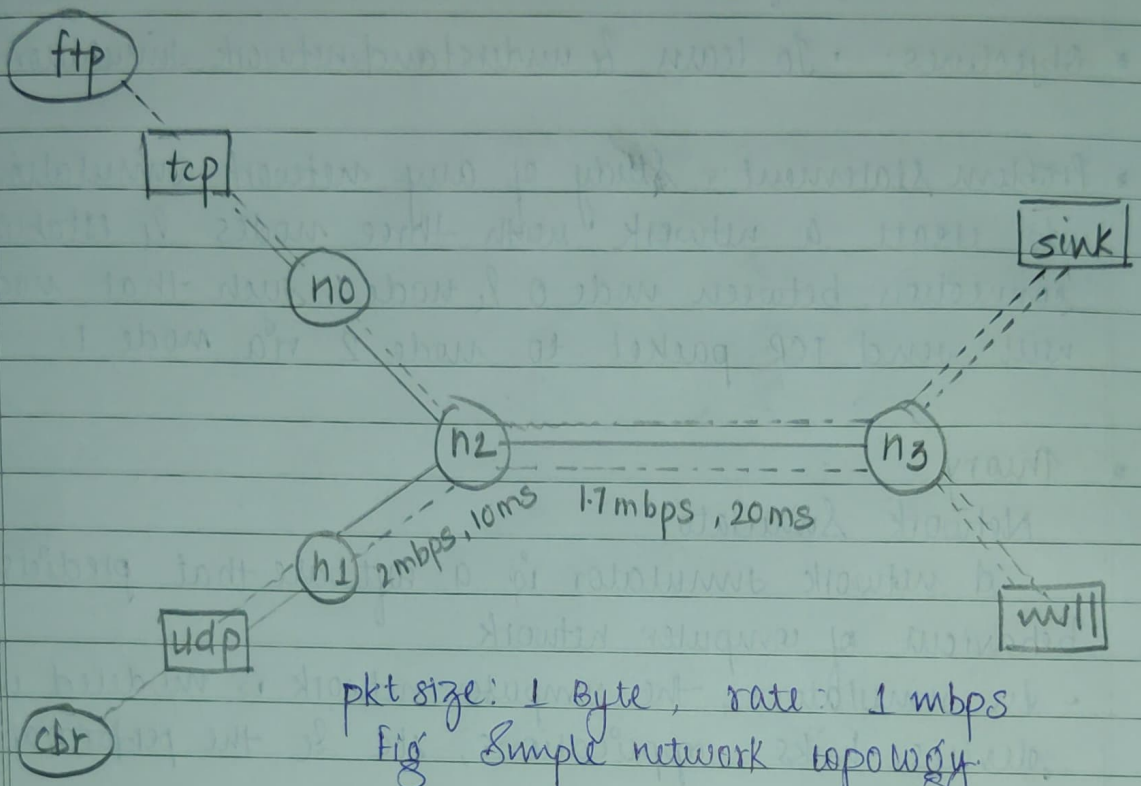
* In this assignment a file ends with '.tcl' is an OTCL script that creates the simple network configuration, & runs the simulation scenario.



pkt size: 1 Byte, rate: 1 mbps

Fig Simple network topology

The network shown in fig consists of 4 nodes. The duplex links between n0 & n2, n1 & n2 have 2 mbps of bandwidth & 10ms of delay. The duplex link between n2 & n3 has 1.7 mbps of bandwidth & 20 ms delay.

Each node uses a droptail queue of which the max size is 10. A "tcp" agent is attached to n0, & a connection is established to tcp "sink" agent attached to n3. As default, the max size of packet that "tcp" agent can generate is 1K Byte. A tcp "sink" agent generates and sends Ack packets to the sender (tcp agent) & frees the received packets.

A "udp" agent that is attached to n1 is connected to a 'null' agent attached to n3. A 'null' & 'cbr' traffic generator

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are attached to 'tcp' & 'udp' agent respectively & the 'cbr' is configured to generate 1k byte, packets at the rate of 1 mbps. The cbr is set to start at 0.1 sec & stop at 4.5 sec & ftp is set to start at 1.0 sec & stop at 4.0 sec.

* Conclusion:

We learned and understood the concept of network simulation using ns2 successfully.

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