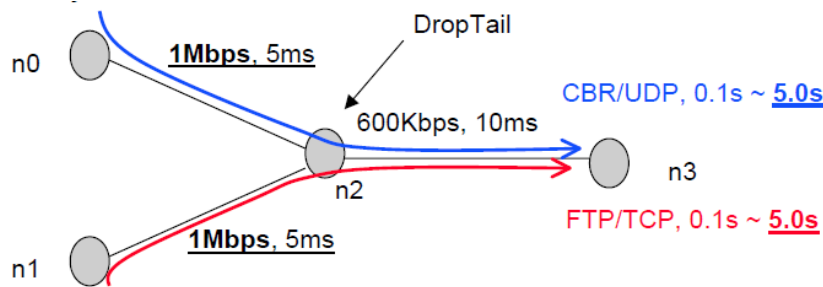


## Advanced Computer Networks, Fall 2013

### Assignment#2: NS2 simulator

**due: November 30<sup>th</sup> 12:00 p.m**

It's required to write a Tcl script that implements the following network topology and simulation scenario. A snapshot of the NAM output should be handed as well.



1. calculate/measure the following metrics by processing the output trace file. You can use grep/awk etc to process this information:

- Sequence number vs. Time at n1
- Queue length vs. Time at n2
- Num of dropped packets at n2

2. Consider the following parameters:

- Offered Load: The rate at which CBR traffic is being injected into the network. Express it in kbps (kilo bits per second).
- Packet Loss: The number of packets that were sent by the sender, but didn't reach the destination. Express it in percentage.
- Average end-to-end delay: If  $t_1$  is the time the packet was generated at the source and  $t_2$  was the time the packet was received at the destination. Delay of a packet is  $t_2 - t_1$ . Calculate average of these values for packets that reached the destination. Express it in ms.
- Throughput: The rate at which bits are being received at the destination? Eg: If 100 packets of size 100 bytes were received in a duration of 100 seconds, we say the throughput is  $100 * 100 * 8 / 100 = 800\text{bps}$  or  $0.8\text{kbps}$ . Express it in kbps.

use grep/awk etc to process this information for UDP and TCP separately:

- Offered Load vs percentage packet loss
- Offered Load vs Average end-to-end delay
- Offered load vs throughput

### **Submissions:**

-Ns2 simulation script

-All the required graphs and statistics

### **Notes :**

- Due date is saturday, November 30<sup>th</sup>, 2013. **No solution will be accepted after the deadline.**
- Less or no credits will be given for unclear solutions.