

EEC 687/787 Mobile Computing

Ns-2 Laboratory #10

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Lab#1: Impact of Multiple-hop Routes on TCP

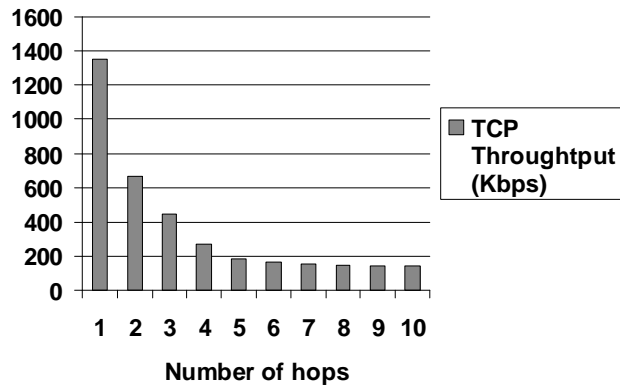
- Write a TCL script
 - A string topology consisting of 11 nodes
 - Every two neighboring nodes are separated by 200m
 - No mobility
 - Traffic
 - Node 0 sends TCP packets to node 1 (Test #1)
 - Node 0 sends TCP packets to node 2 (Test #2)
 -



- Observation
 - End-to-end throughput
 - What else are you interested in measuring? Cwnd? Rtt?

Do You Get a Similar Chart?

Connections over multiple hops are at a disadvantage compared to shorter connections, because they have to contend for wireless access at each hop

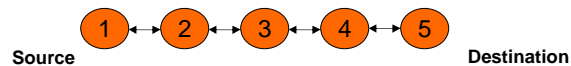


TCP Throughput using 2 Mbps 802.11 MAC

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Lab#2: Interplay with 802.11 MAC



- Write a TCL script
 - 5-node scenario
 - A single TCP connection (1 -> 5)
 - Use TCP Reno

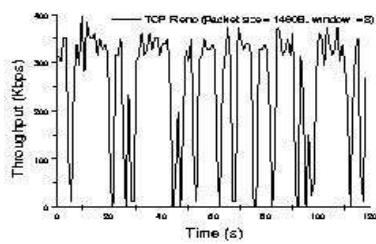
- Observation
 - Throughput with different maximum window size (window_) (32, 8, and 4)

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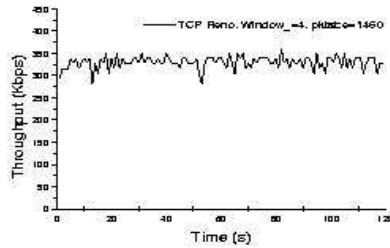
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Do You Get a Similar Chart? (Instability Problem)

- When window_=32 or 8, serious oscillation of throughput is observed.
- When window_4, throughput is stable.



(b) Reno, window_=8

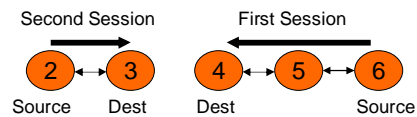


(c) Reno, window_=4

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Lab#3: Interplay with 802.11 MAC



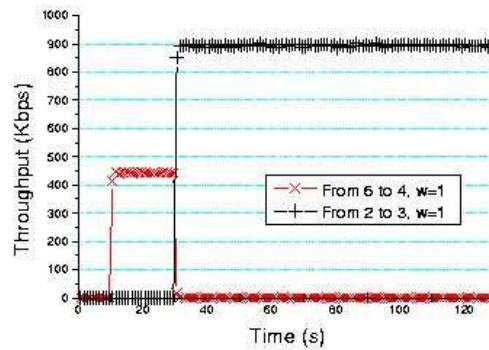
- Write a TCL script
 - 5-node scenario
 - The first TCP session (6 to 4) starts at 10.0s.
 - The second TCP session (2 to 3) starts at 30.0s.
- Observation
 - Throughput of the first and second session
 - What else do you want to measure?

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Do You Get a Similar Chart? (Unfairness Problem)

- ❑ From 10s to 30s (only the first session exists)
 - The first session has a throughput of about 450kbps
- ❑ After 30s (with two sessions)
 - The second session has a throughput of about 900kbps while the first has “zero” throughput



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