



*Network Measurements
with Periodic and Poisson Sampling:
Preliminary Results*

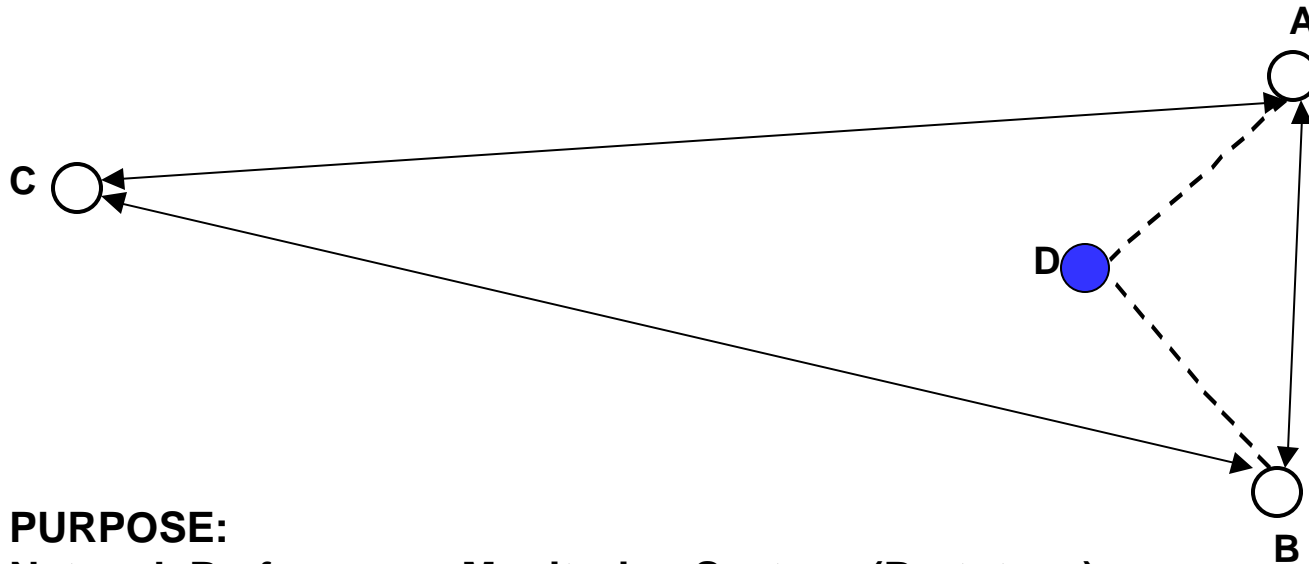
Len Ciavattone

Nicole Kowalski

Al Morton

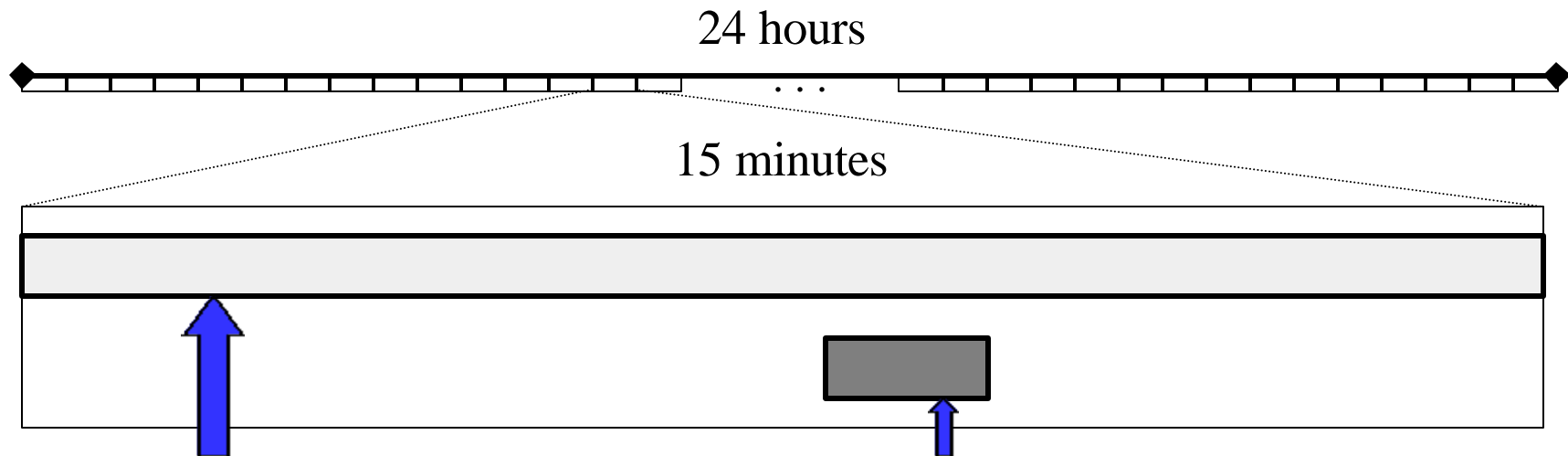
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Network Measurement Topology



PURPOSE:
Network Performance Monitoring System (Prototype)

Measurement Design



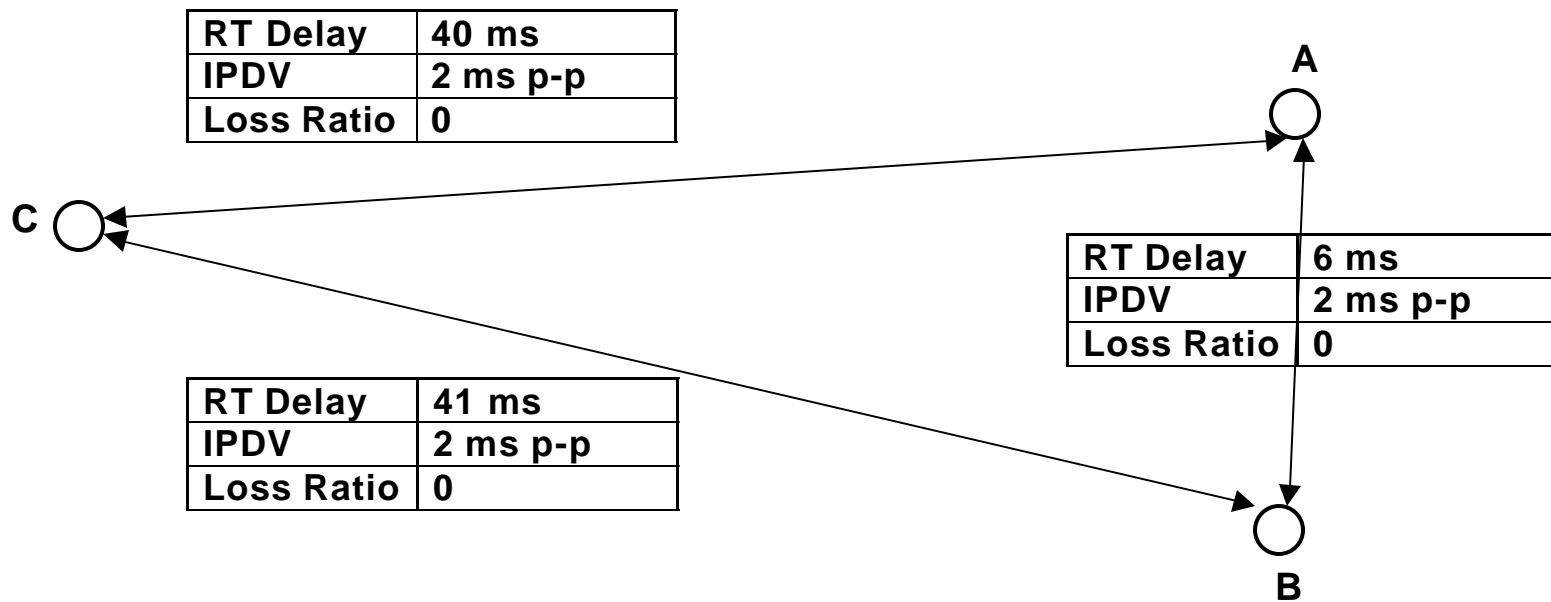
- **Poisson Sequence**

- 15 minute duration
- $\lambda = 0.3$ pkts/sec
- Type UDP
- 278 bytes total

- **Periodic Sequence**

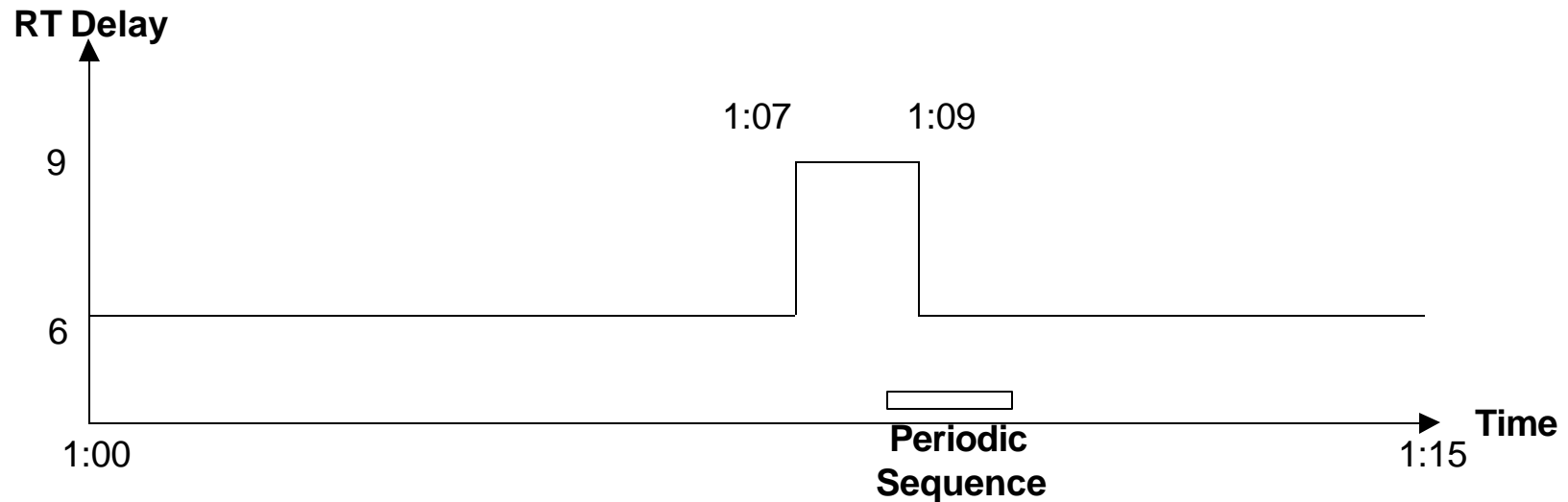
- 1 minute duration ($T_f - T_0$)
- Random Start Time
- 20 ms $incT$
- Type UDP, IPv4
- 60 bytes total, $p(1)$
- min 3 sec dT_{loss}

Typical Results



Results: A-B Route Changes

Time, h:m	Type	Lost Packets	Burst Duration	Route Dur, m:s
0:49	Poisson	5 consec	23 sec	4:32
1:07	Poisson	5 consec	15 sec	<2:00
1:09	Periodic	54 consec	1.04 sec	(return)
1:18	Poisson	4 consec	26 sec	2:10
1:30	Poisson	5 consec	28 sec	2:03



Summary

- **Independent Implementation of npmps, & ...**
- **Dense Sampling can characterize short-term loss events very accurately**
- **Complement with Sparse, Poisson sample**
- **Loss is a *chapter***
- **Delay Variation is another <stay tuned>**