

Maximum Multicast Utility

Problem of per receiver network utility maximization

Solution combines:

1. backpressure type scheduling
2. threshold-based packet dropping at intermediate nodes

Network Control Policy

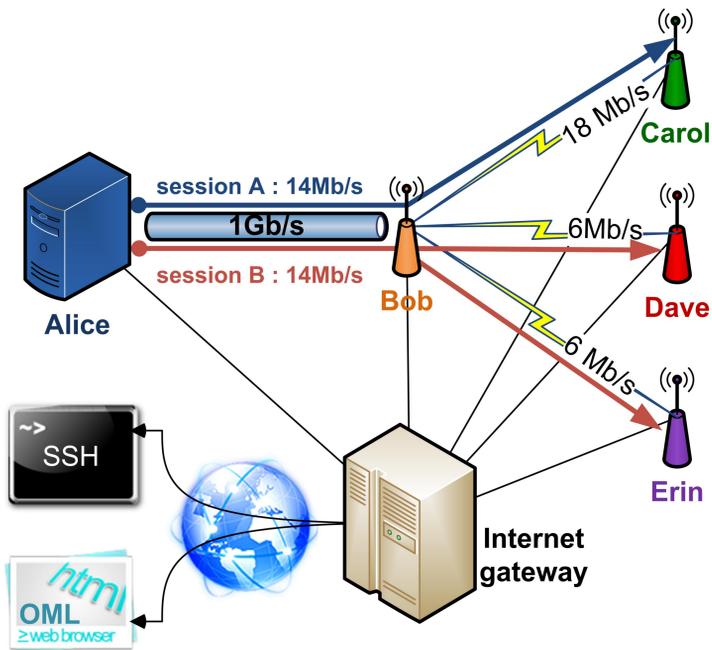
All stream layer packets are initially injected

Progressively, some packets are dropped

Dropping decisions based on local info

Receiver-based flow control for max utility

Deployment in the NITOS testbed



Demonstration Details

Implementation based on the Click Modular Router

Channel quality estimation based on the ETT algorithm of Roofnet

Broadcasts every 100msecs for the differential backlog computation

Utility = throughput - K (requirement - throughput)⁺

Problem : max throughput s.t. the following req/nts

Example I

Bob ≥ 14, Carol ≥ 3, Dave ≥ 1, Erin ≥ 1 (Mbps)

Example II

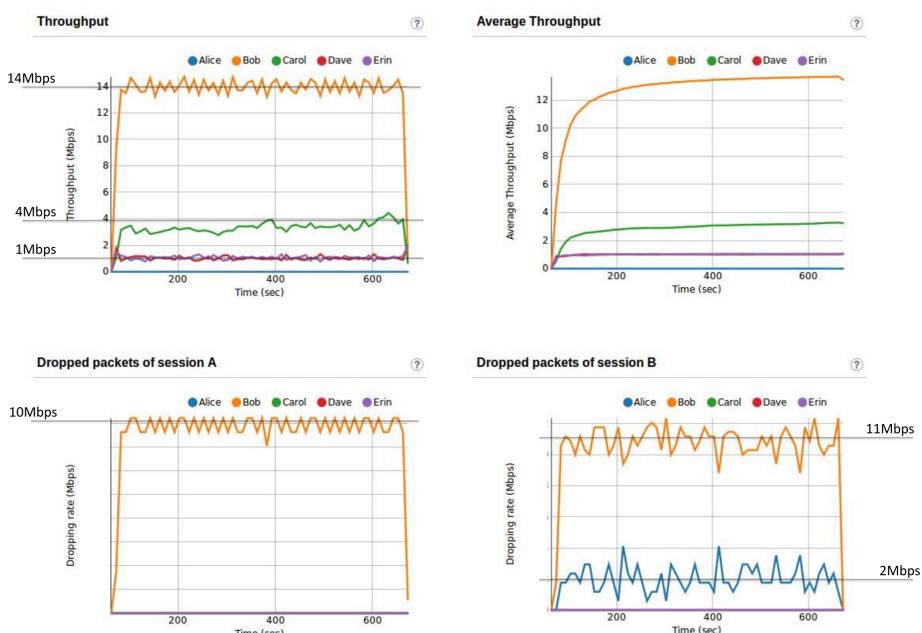
Bob ≥ 14, Carol ≥ 1, Dave ≥ 1, Erin ≥ 3 (Mbps)

Solution

Bob : 14.0, Carol : 3.95, Dave : 1.01, Erin : 0.98

Bob : 14.0, Carol : 1.03, Dave : 1.01, Erin : 2.97

Multicast Multirate experiment



Multicast Multirate experiment

