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Experimental Study

of Wireless Network Performance

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Motivation

Wireless network performance – domain of interest
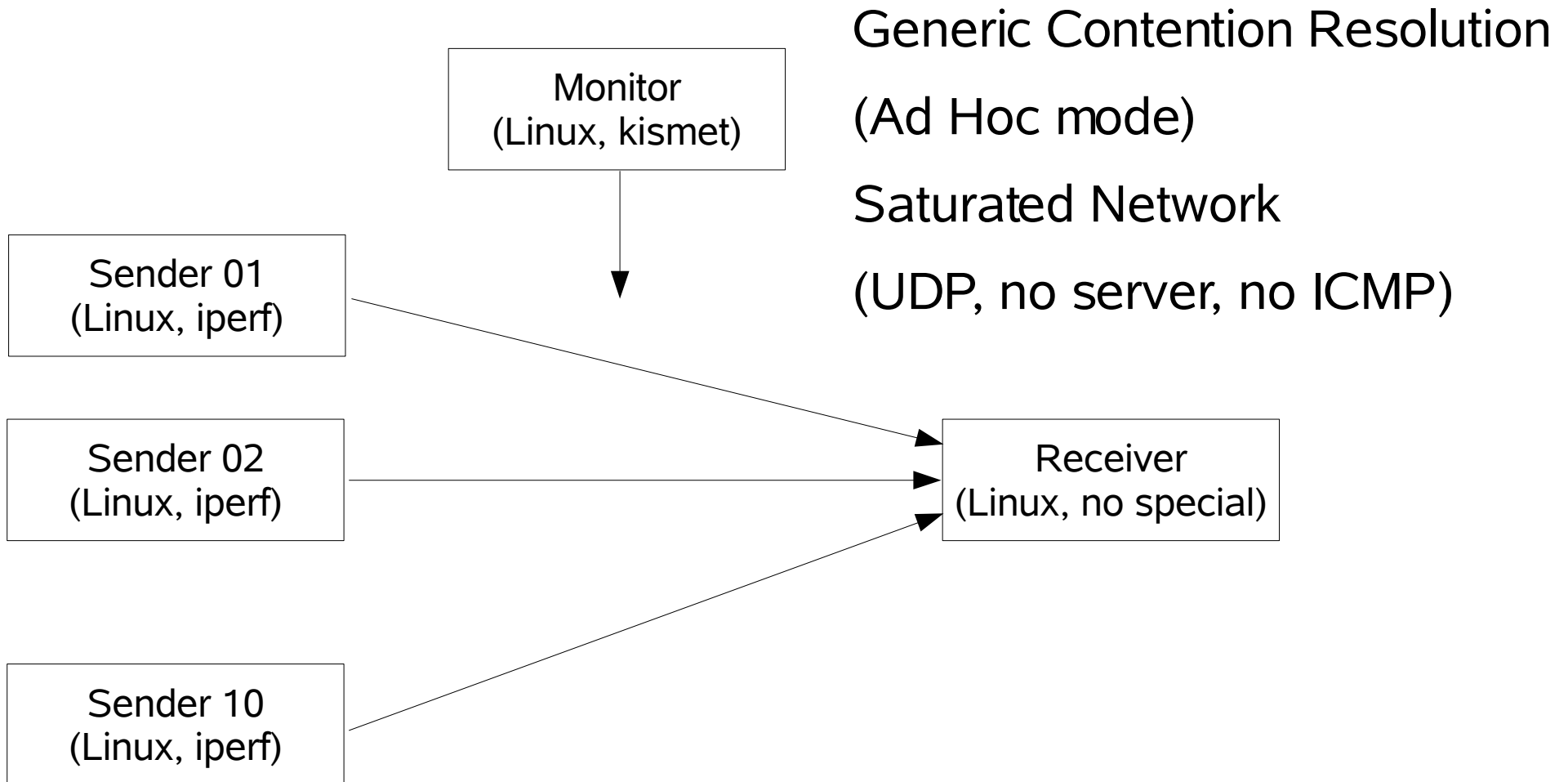
Mathematical models have been developed

Are these models adequate?

Problems

Need of particular measurement tools and techniques

Need of certain network scenarios reconstruction

Experimental Network

Monitor
(Linux, kismet)

Sender 01
(Linux, iperf)

Sender 02
(Linux, iperf)

Sender 10
(Linux, iperf)

Receiver
(Linux, no special)

Generic Contention Resolution

(Ad Hoc mode)

Saturated Network

(UDP, no server, no ICMP)

Experimental Setup

Series of 10 experiments (1 – 10 stations)

Each station generates UDP traffic with wide bandwidth

All ICMP messages are disabled

Monitor in «rfmon mode» - all frames, including ACKs

Hardship

Monitor can miss frames

Kismet is unstable :(It buzzes approximately in 10% tests

Need of noiseless network poses problems

Collected data processing

Count the number of successfully transmitted frames

Count the number of unconfirmed and broken frames

Calculate the length of «successful transmission» interval

Evaluate the average normalized throughput

Hardship

Currently we have no way to estimate processing delay

Some results...

Normalized throughput compared with theoretical results