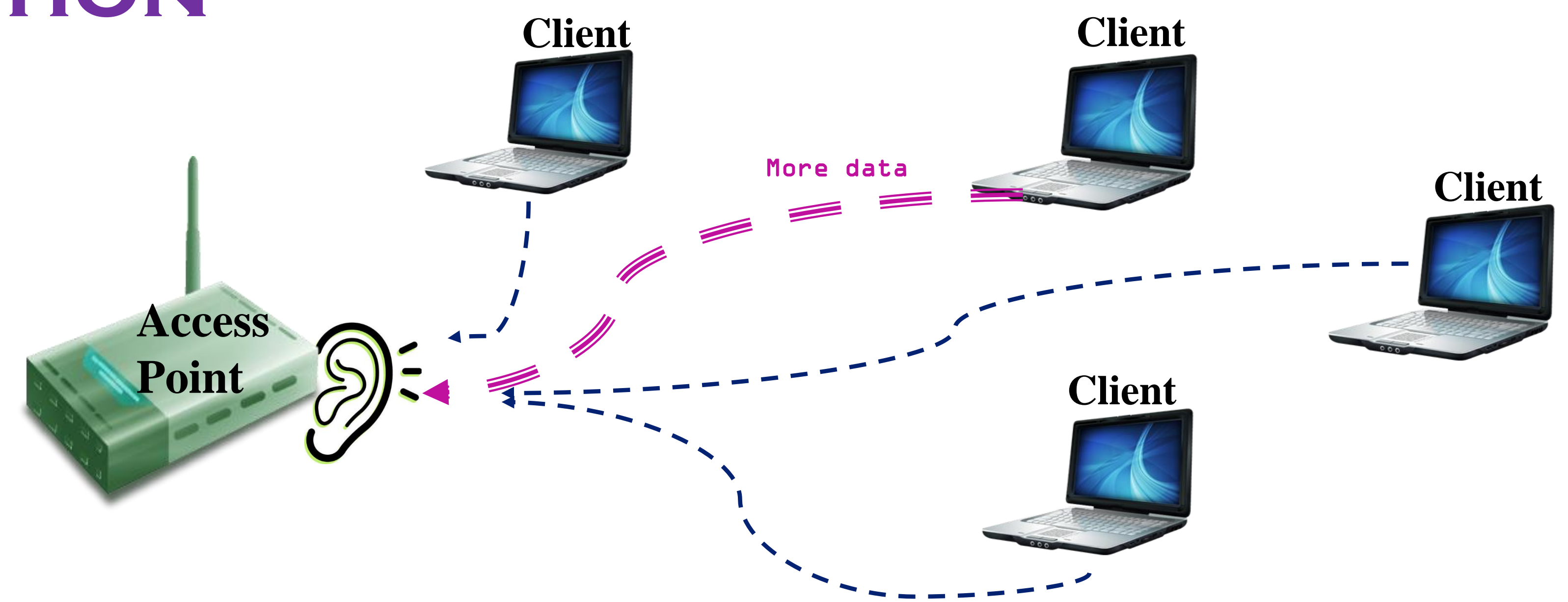


A STUDY OF CHANNEL CAPTURE EFFECT IN 802.11

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MOTIVATION

- Shared Medium—Everyone is using the wireless space
- Short term Fairness—No one has to wait too long to send data
- Long term Fairness—Everyone eventually sends all their data
- Channel Capture Effect—One client sends data successively and others wait and back off randomly
 - Characterized by short term unfairness and long term fairness

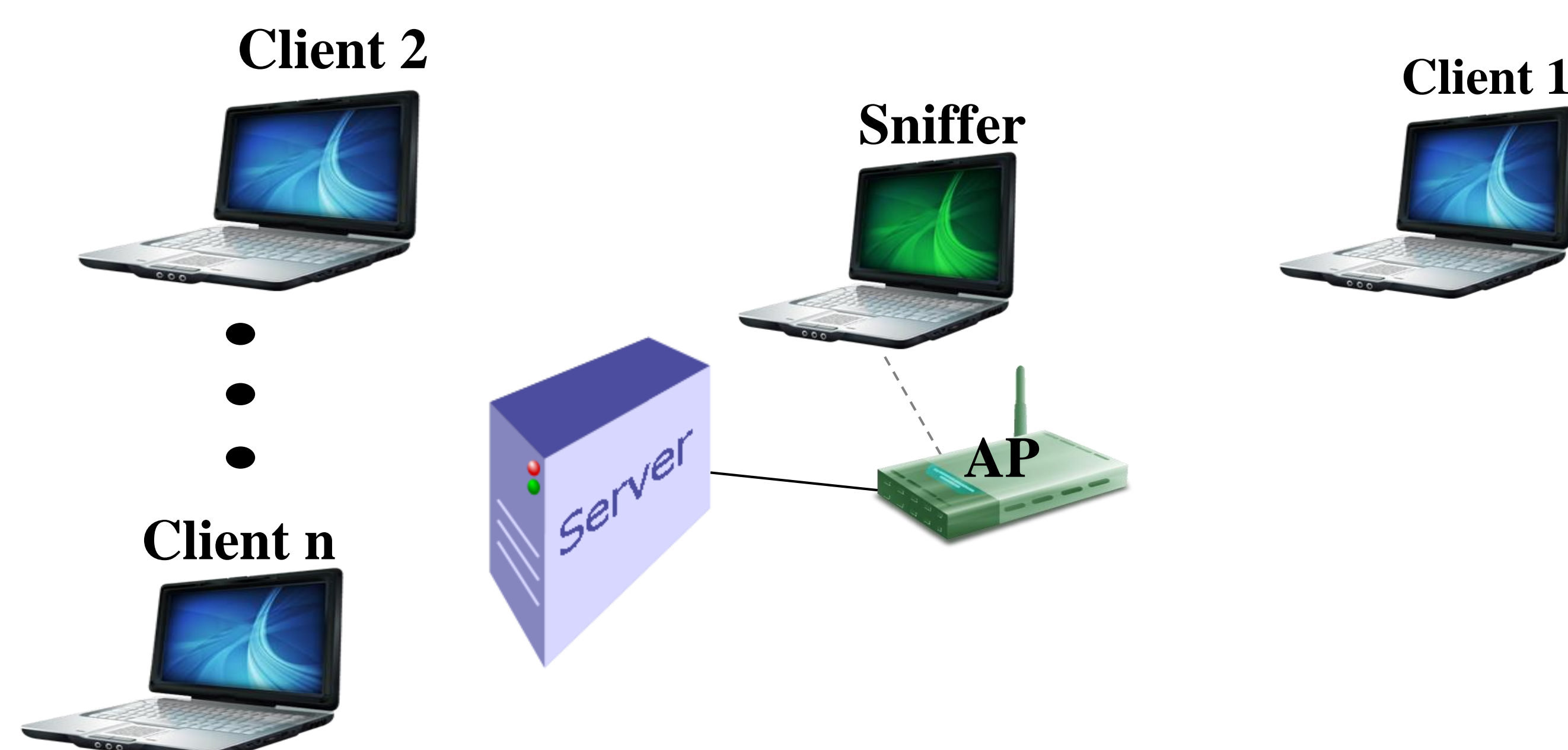


PROBLEM

Is channel capture effect observable in 802.11 and how do clients affect it?

APPROACH

- Measure effect of:
 - Number of clients
 - Relative configuration of clients
- Metric of interest:
 - Successive frames sent by a client
 - Total frames sent by a client
- Create a private network
 - Collect UDP traffic using a sniffer
- Use SharpPcap Library to process sniffer traces



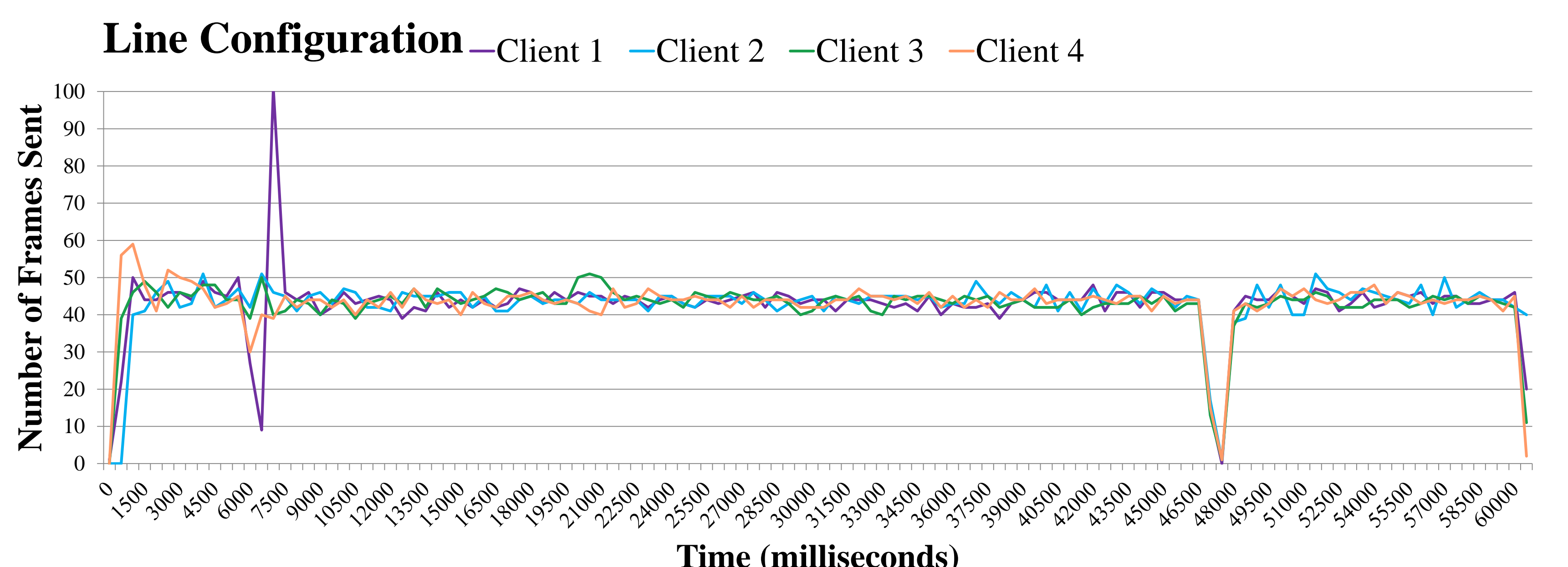
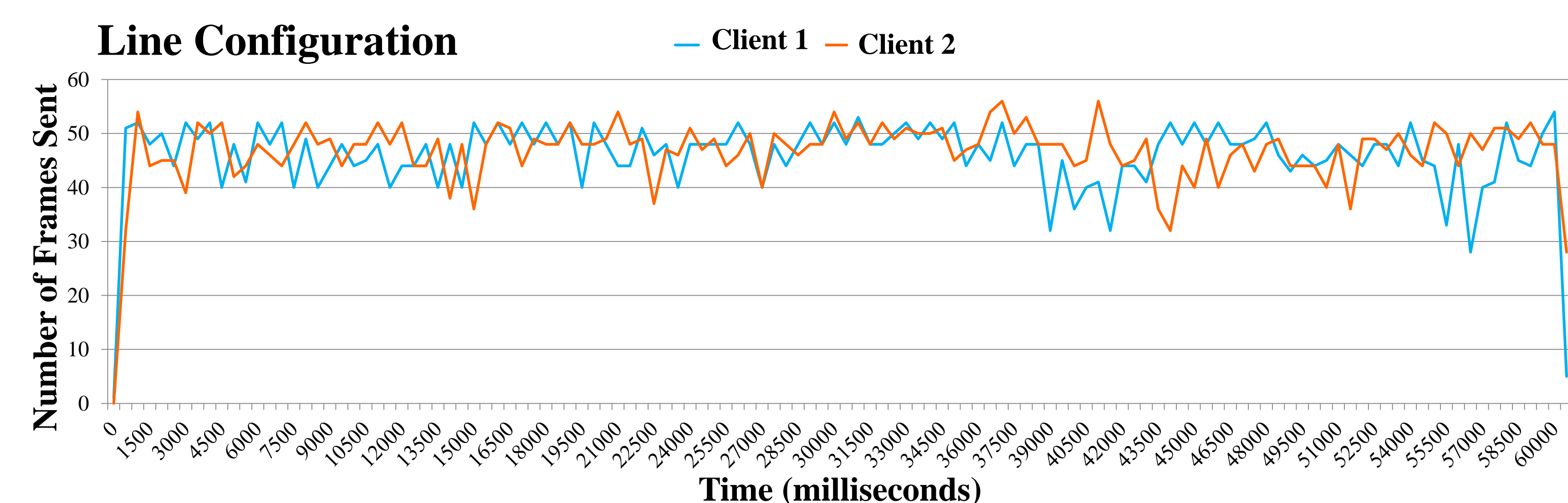
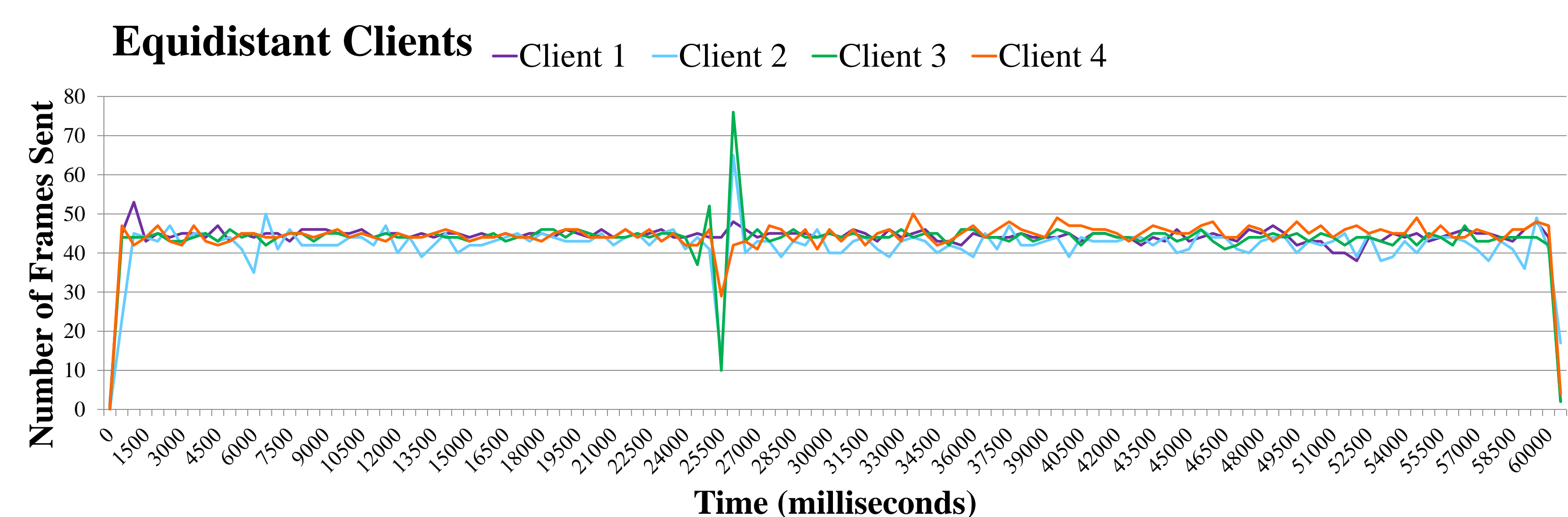
Configuration 1: Equidistant Clients from Access Point



Configuration 2: Line Configuration of Clients

PRELIMINARY RESULTS

- Signal Strength of clients leads short term unfairness
- Closer clients are able to send more successive frames
- As number of clients increases the variability of frames sent per unit time decreases
- 802.11 is long term fair
- Need more granularity to characterize Channel Capture Effect



FUTURE WORK

- Increase number of clients
- Try random client distances and configurations
- Study the effect outside a controlled lab environment
- Analyze the effect of channel idle time
- Analyze the effect of retries for sending frames
- Study effect of Hidden Terminals