

Multichannel MAC protocols in wireless multi-hop mesh networks

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Current status

Agenda

- Short rehash: what am I doing?
- Current status
- Preliminary results
- Planned simulations

Topic

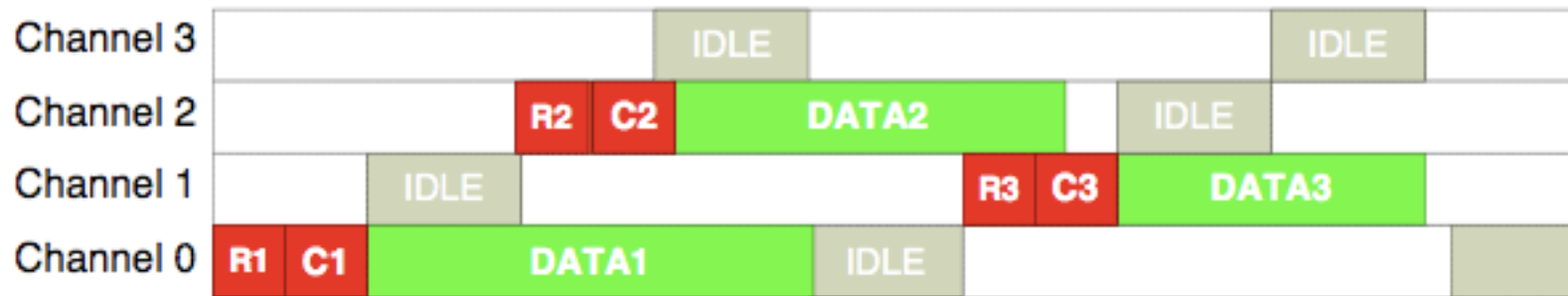
- Multichannel MAC protocols in wireless single radio multi-hop mesh networks (based on 802.11)

Multichannel MAC protocols

- Multichannel happens on MAC layer
- Mostly transparent to upper layers
- 3 distinct principles of operation in literature
 - Common hopping
 - Split phase
 - Disjoint hopping

Common Hopping

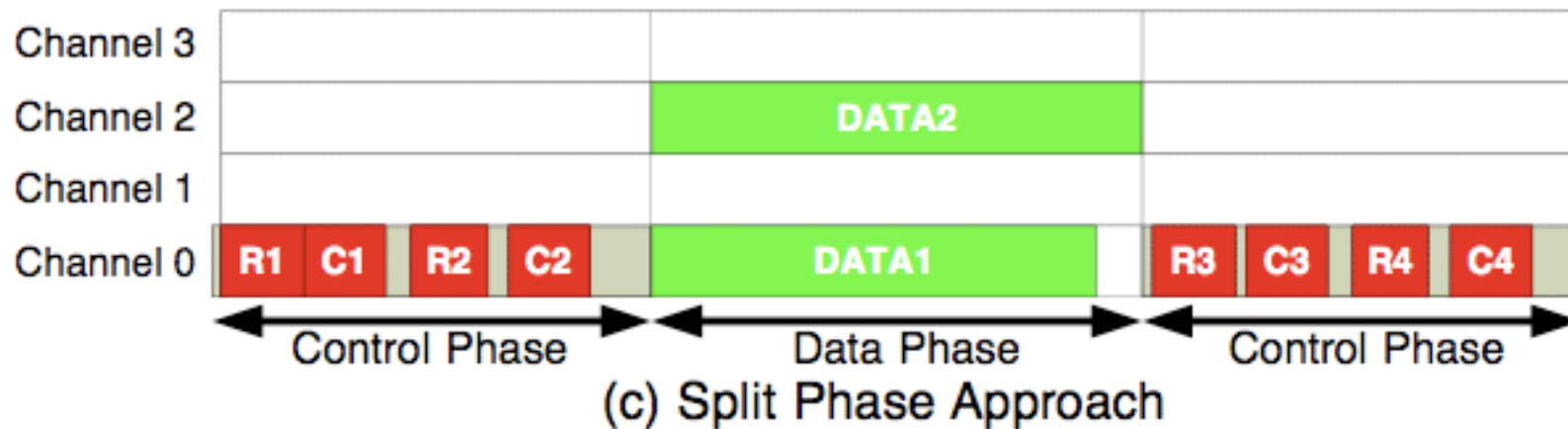
- BC_CHMA
- Performs pretty well in early tests
- Deafness is an issue



(b) Common Hopping Approach

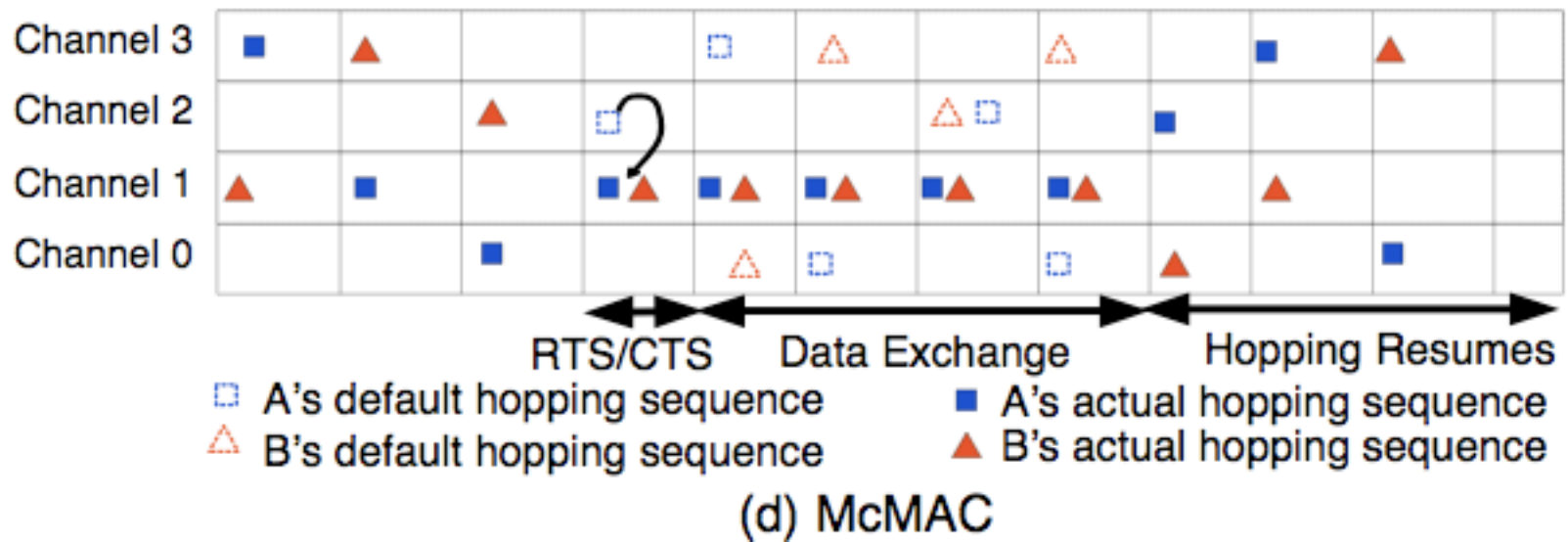
Split Phase

- BC_MM MAC
- Short BCs in Control Phase
- Length of phases is crucial



Disjoint Hopping

- SSCH
- Performance is fluctuating (bug?)
- Deafness/delay



Reminder

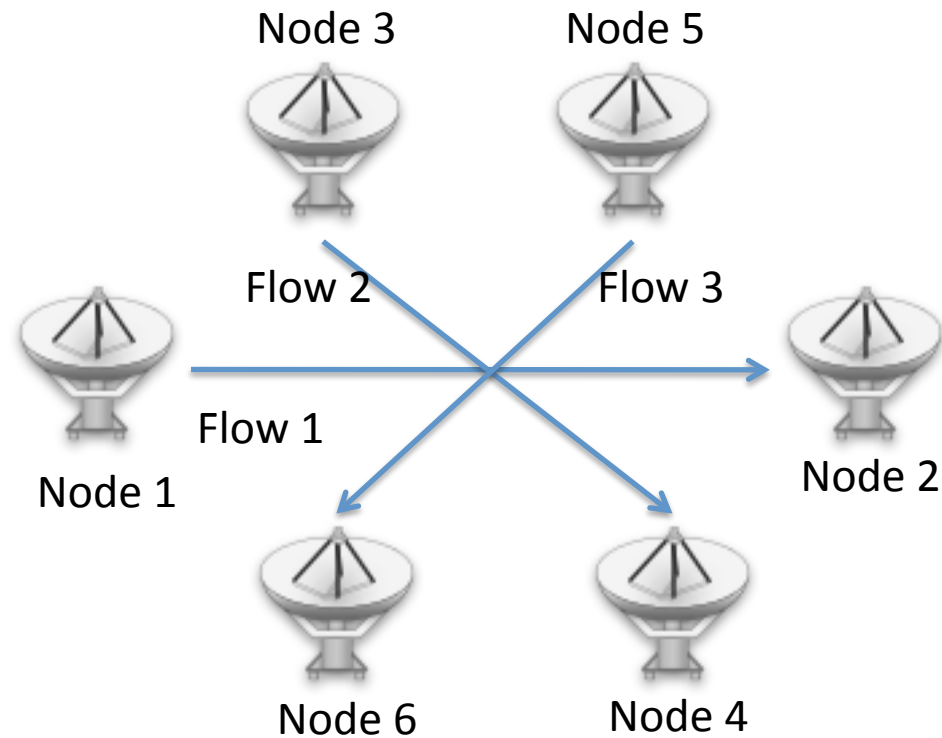
- I am interested in effects on:
 - End-to-end latency
 - Network throughput
 - Per flow throughput
- Multi hop mesh networks with few channel and one radio
- Is there a gain from any of the protocols?
- Is there a niche? (Transit networks?)

Current status

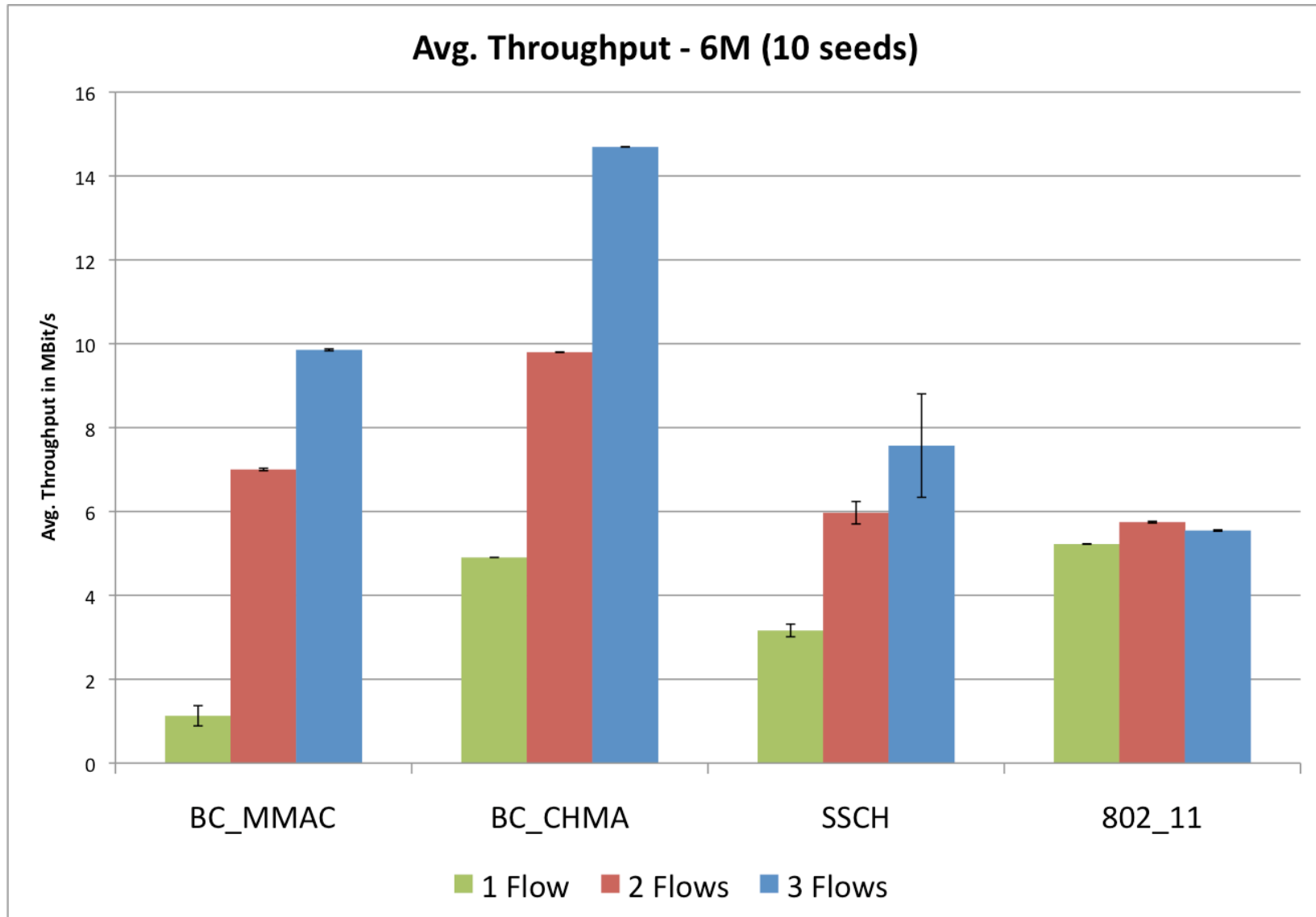
- All three MACs are running
- Some minor bugs possible...
- Simulating since a few days

Scenario

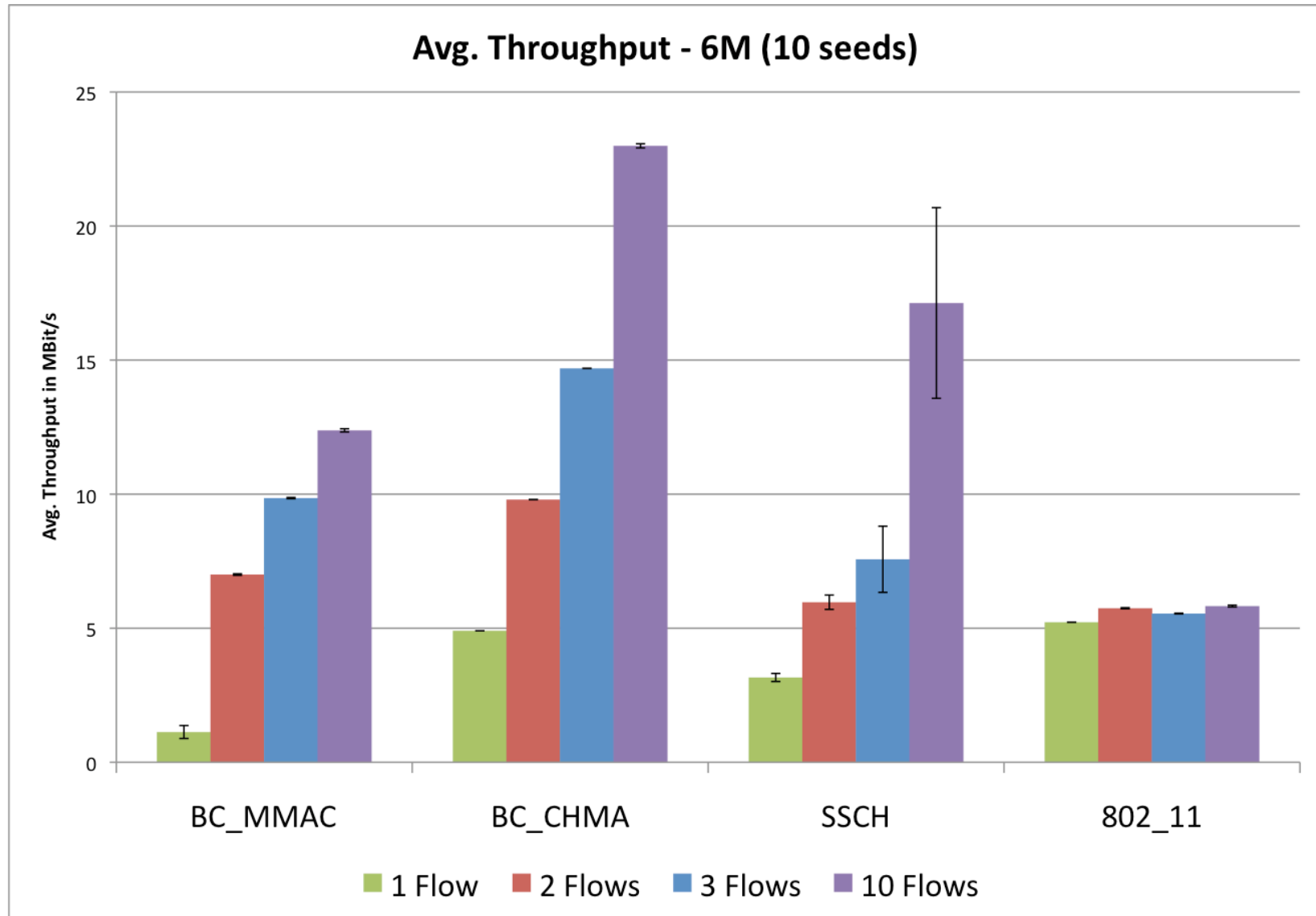
- 2/4/6 nodes
- 1/2/3 flows
- Single hop
- 1 collision domain



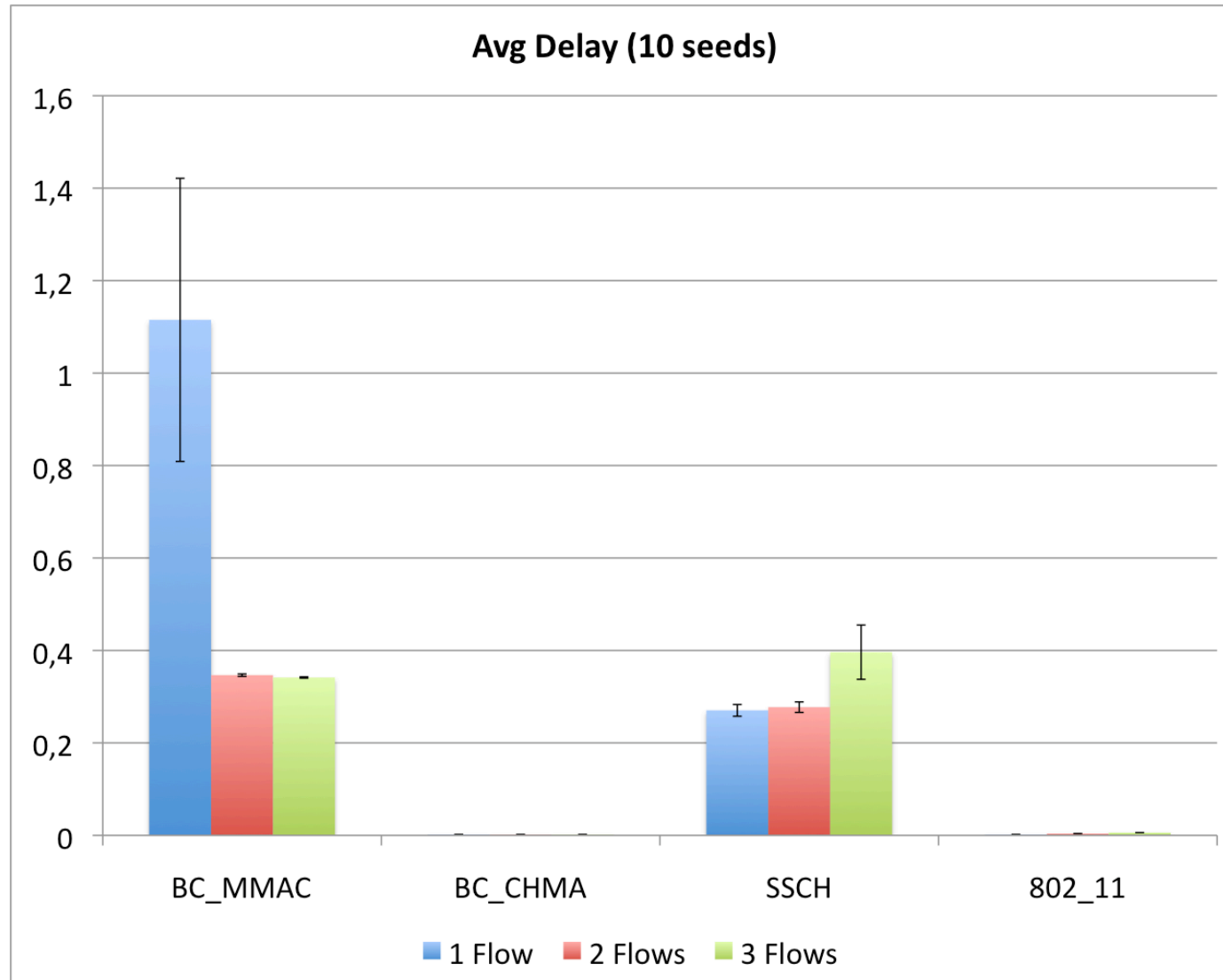
Results



Results

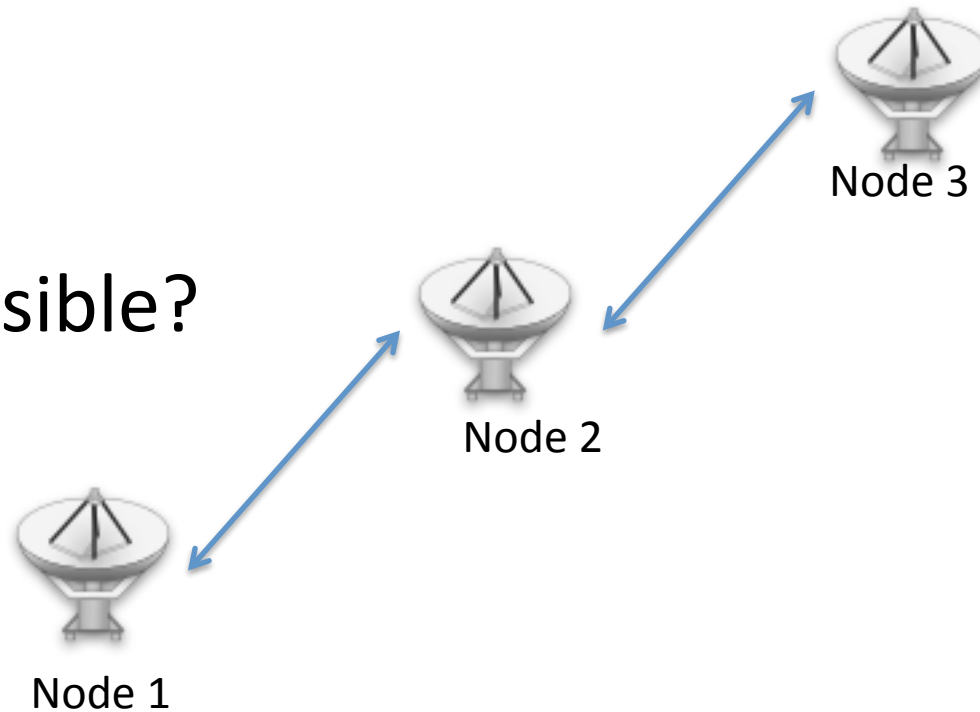


Results



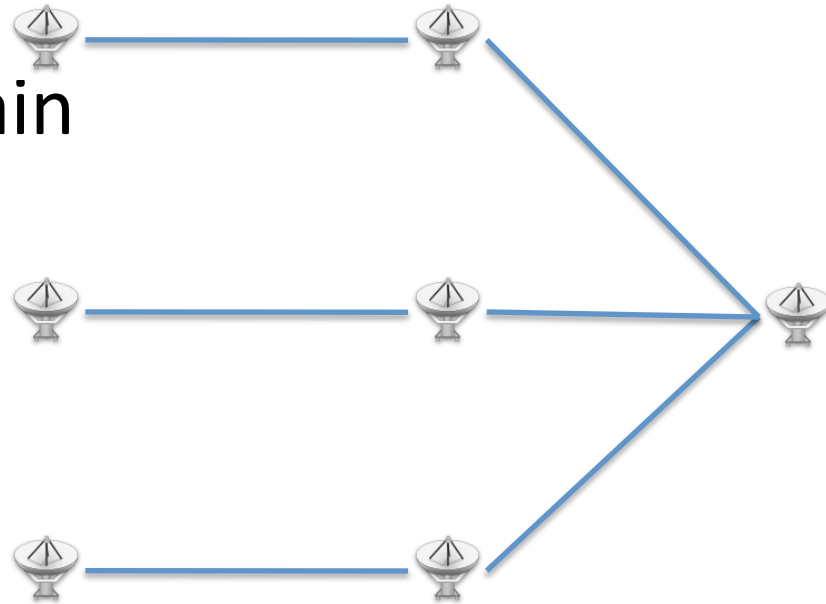
Planned Scenario 1

- Multi hop
- 1/2 flow
- 3 nodes
- Is multi hop feasible?



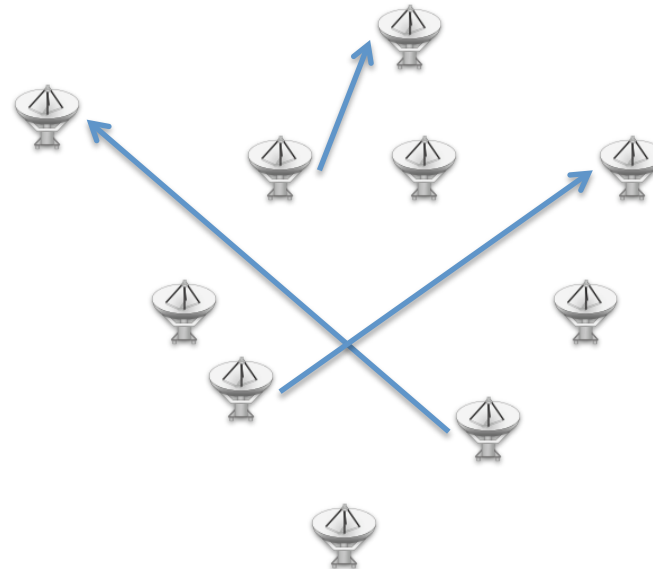
Planned Scenario 2

- Does it hurt GW scenarios?
- Few hops
- Common source/drain



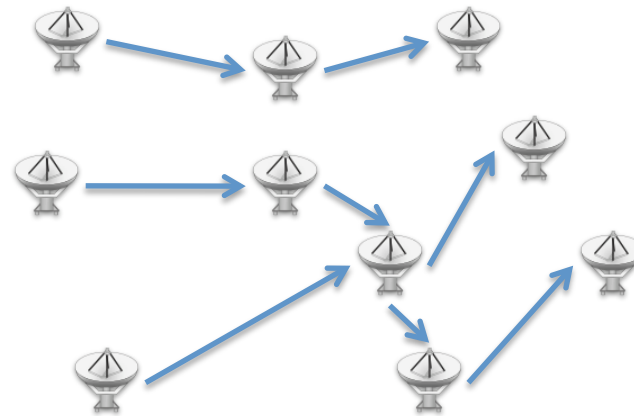
Planned Scenario 3

- “Intermesh”
- Multi hop
- Many short flow
- Many nodes



Planned Scenario 4

- Transit network
- Multiple “parallel” flows
- Multi hop
- Many nodes



End

- Questions?
- Ideas?
- ...