CELLULAR IP PERFORMANCE

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Summary of Presentation

- Implementation
- Topology scenarios
- Evaluation
  - Handoff
  - Active/idle issues
  - Scalability issues

Hardware

Cellular IP nodes/mobiles hosts: Pentium 300 MHz

wired links

- ethernet 10/100 Mbps

wireless links

- Wavelan 2 Mbps
- Lucent 802.11, 2-11 Mbps
- Aironet 802.11, 2-11 Mbps

Software

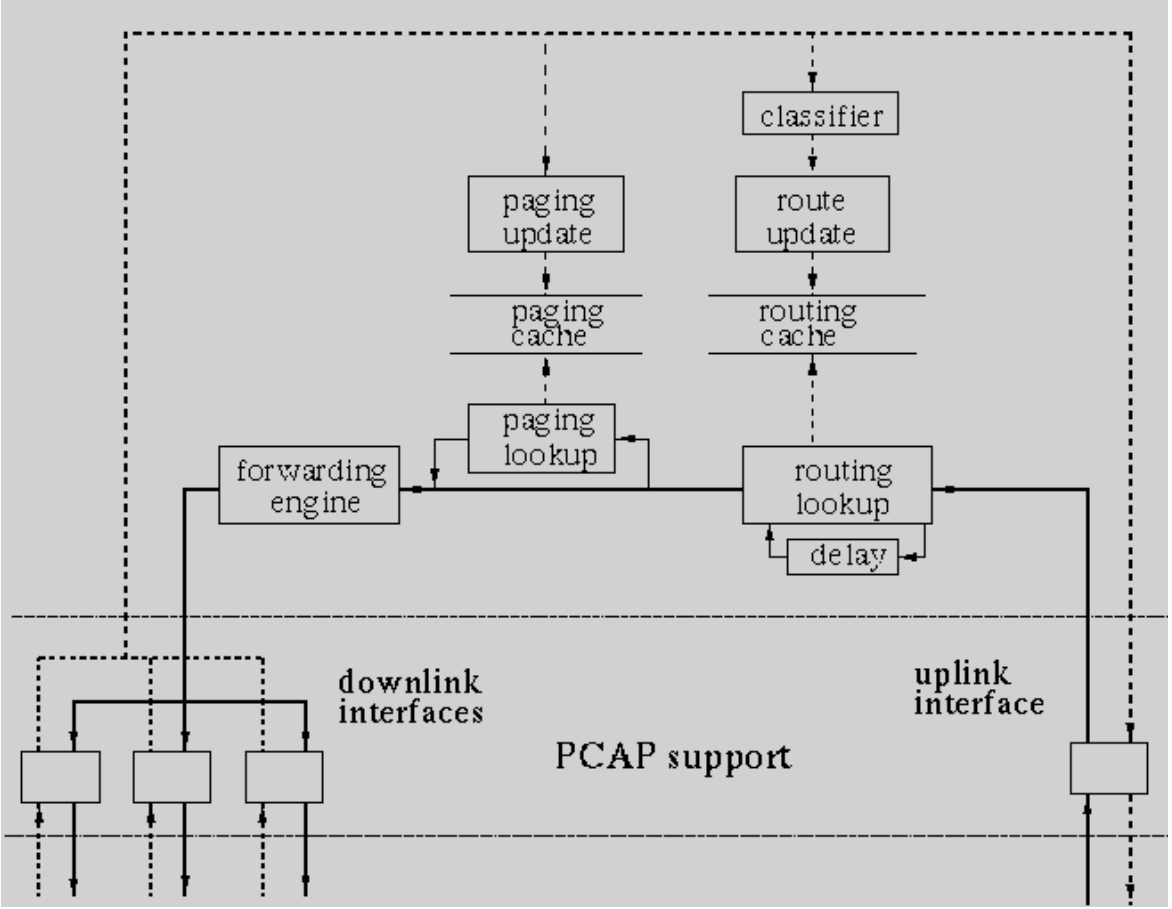
Nodes: freeBSD 3.2

Mobile hosts: freeBSD 3.2/Windows 98

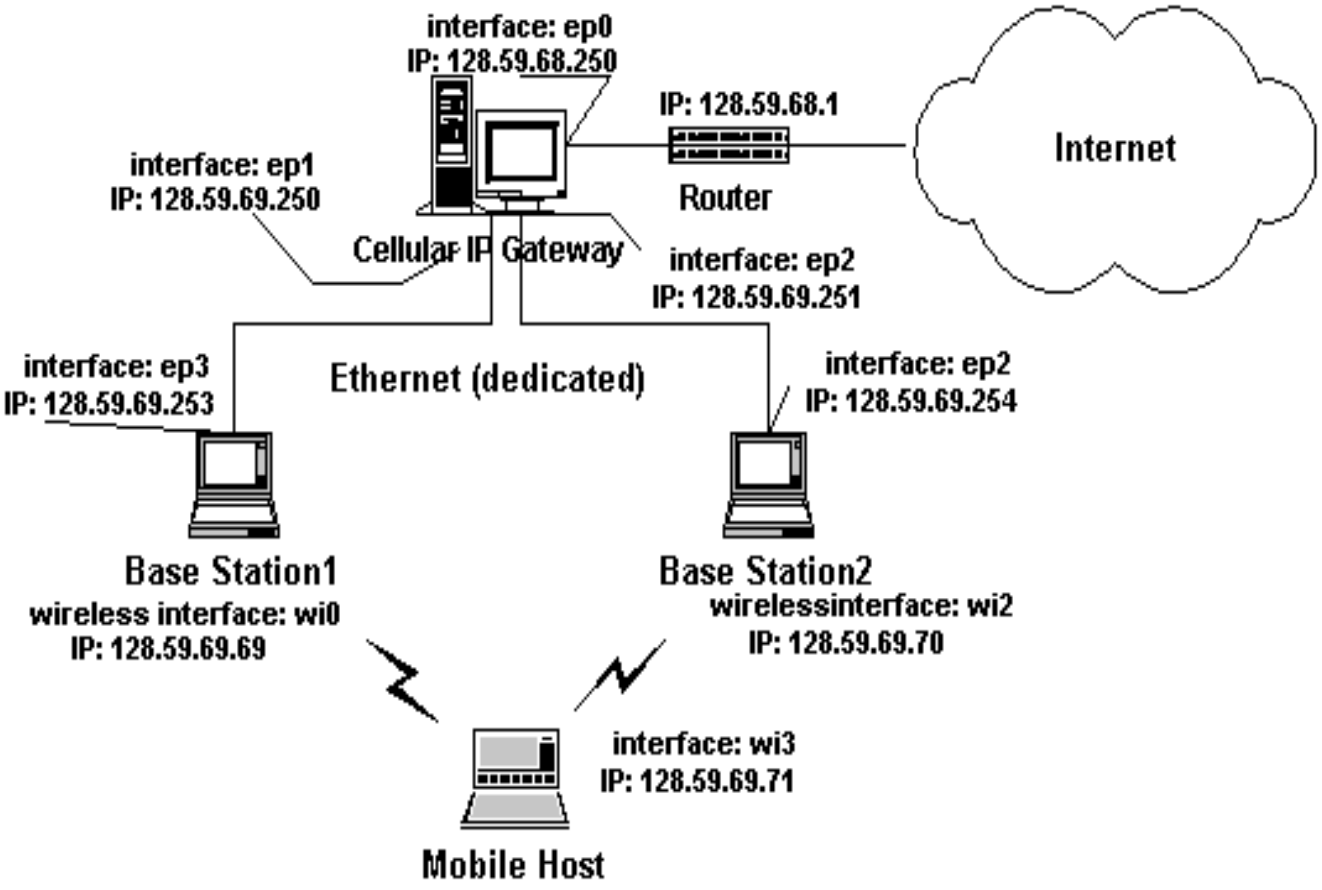
Source code based on PCAP

- easy to upgrade to newer freeBSD releases
- easy to port to other unix OS

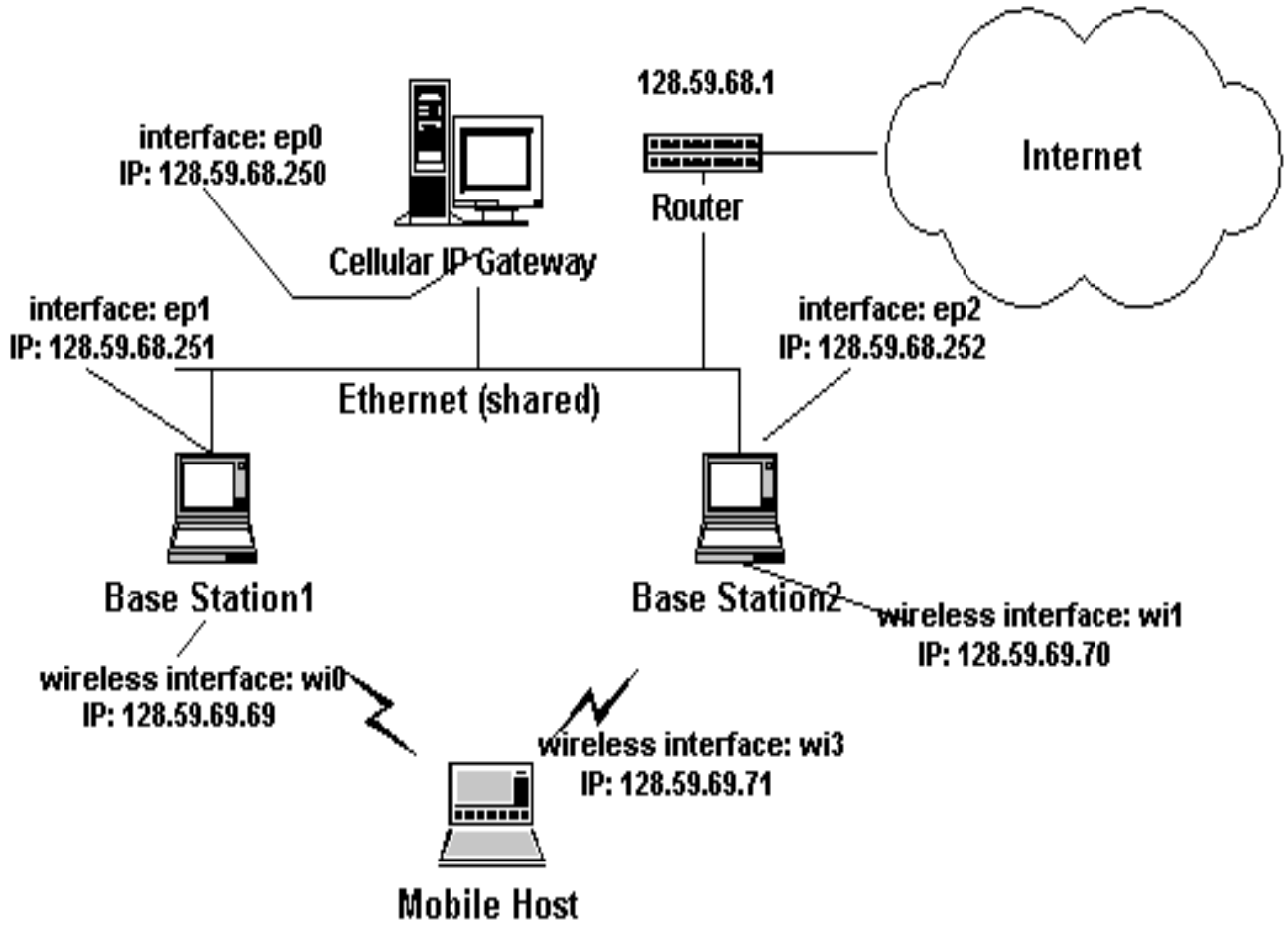
Implementation Model



Topology I: Point to Point wired links



Topology II: Ethernet

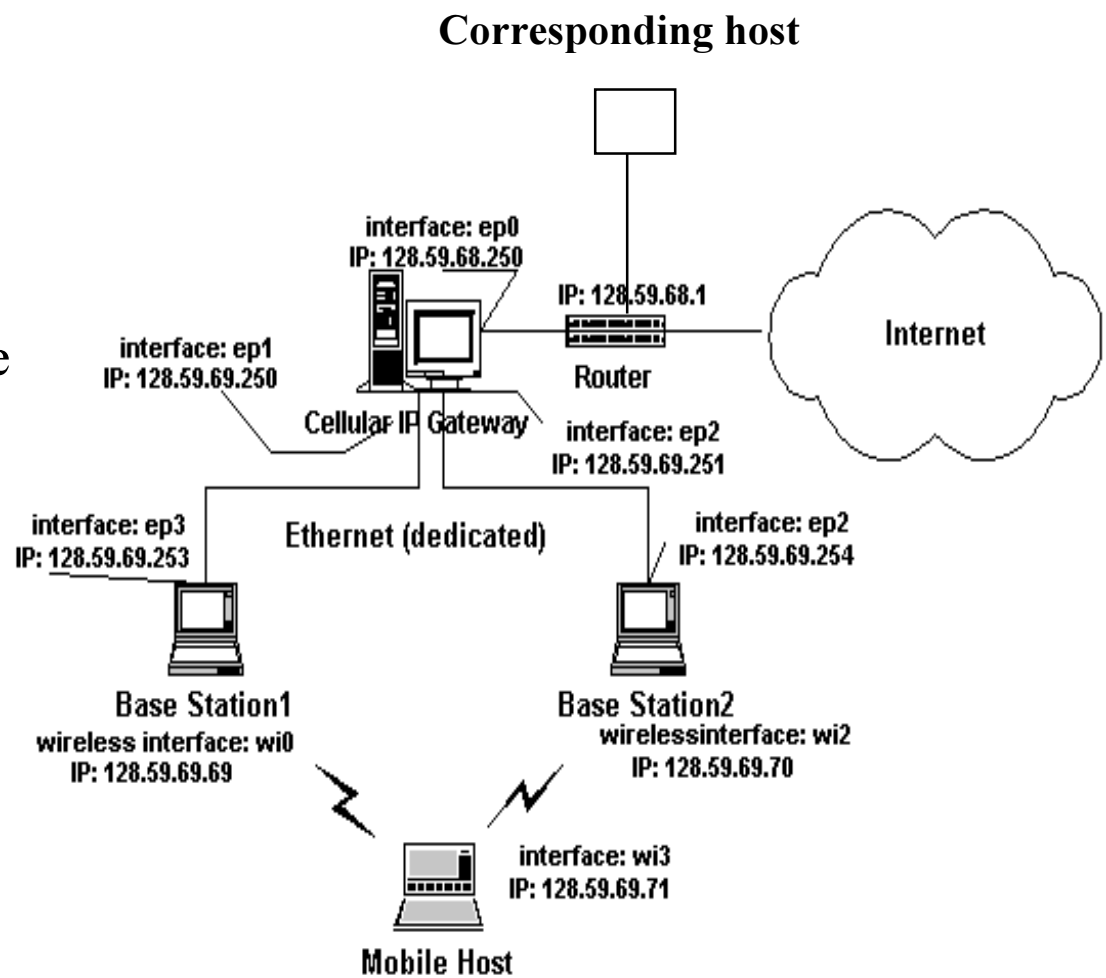


Handoff Performance/UDP

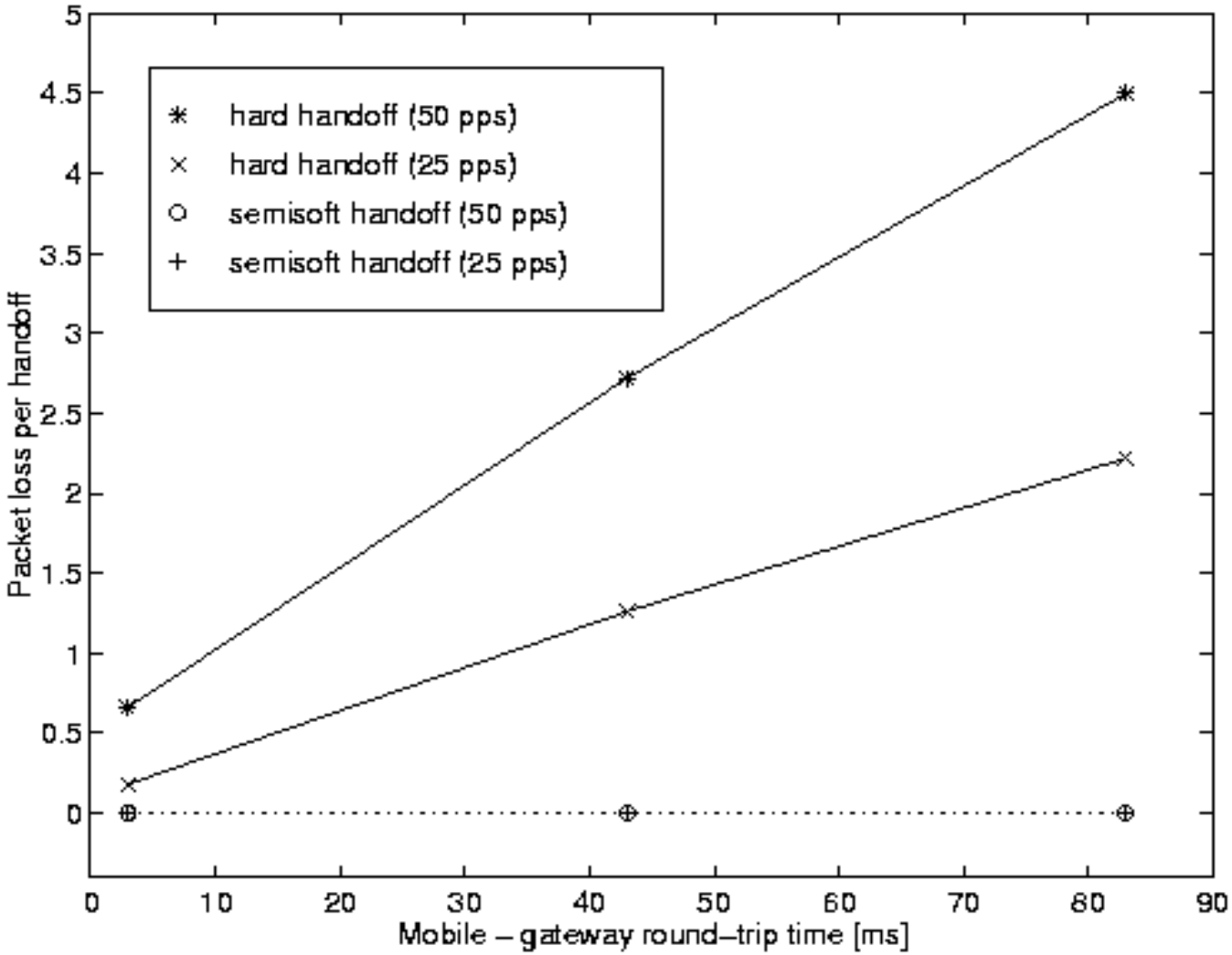
Wavelan 2 Mbps

CBR/UDP downlink traffic

Handoff latency is proportional to the round-trip time between mobile host and cross-over node



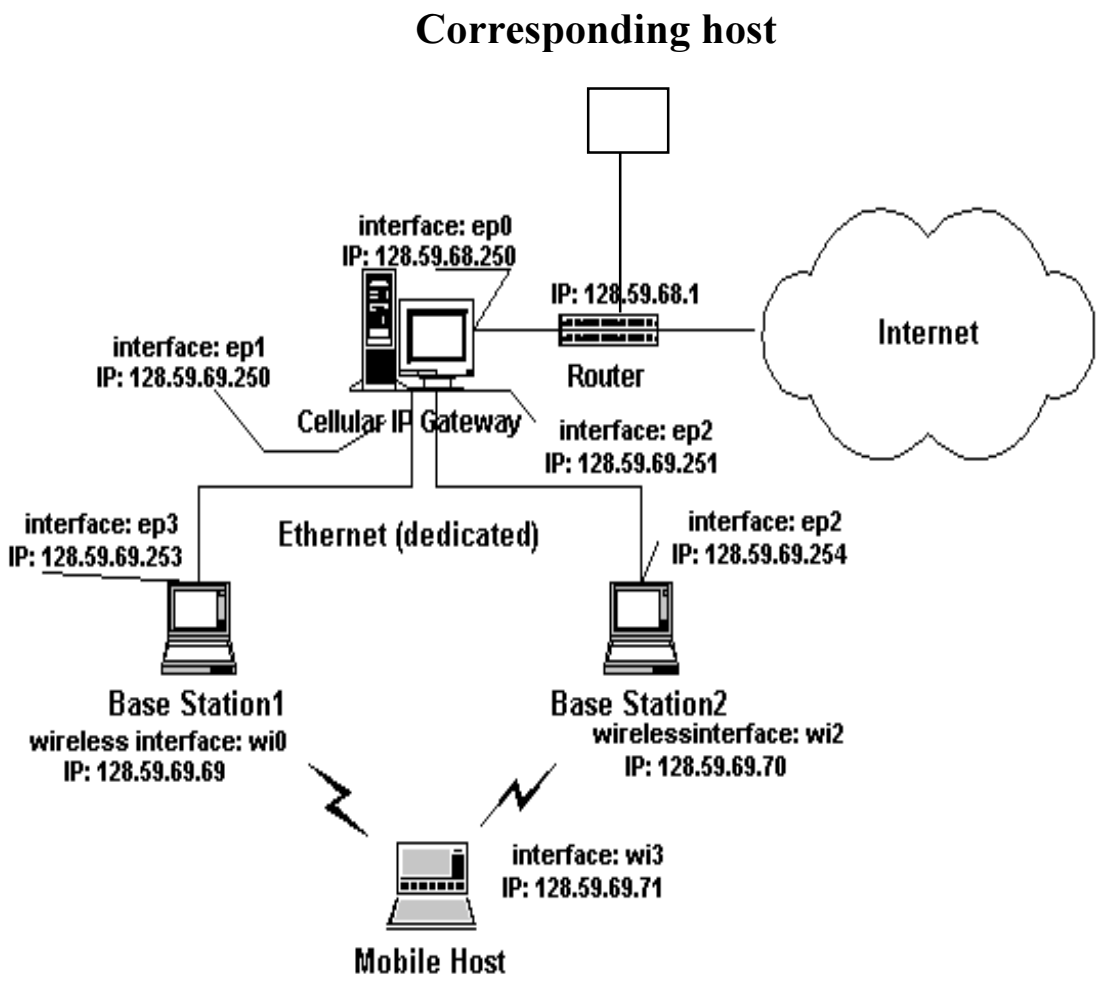
Hard handoff: donwlink cbr/udp stream



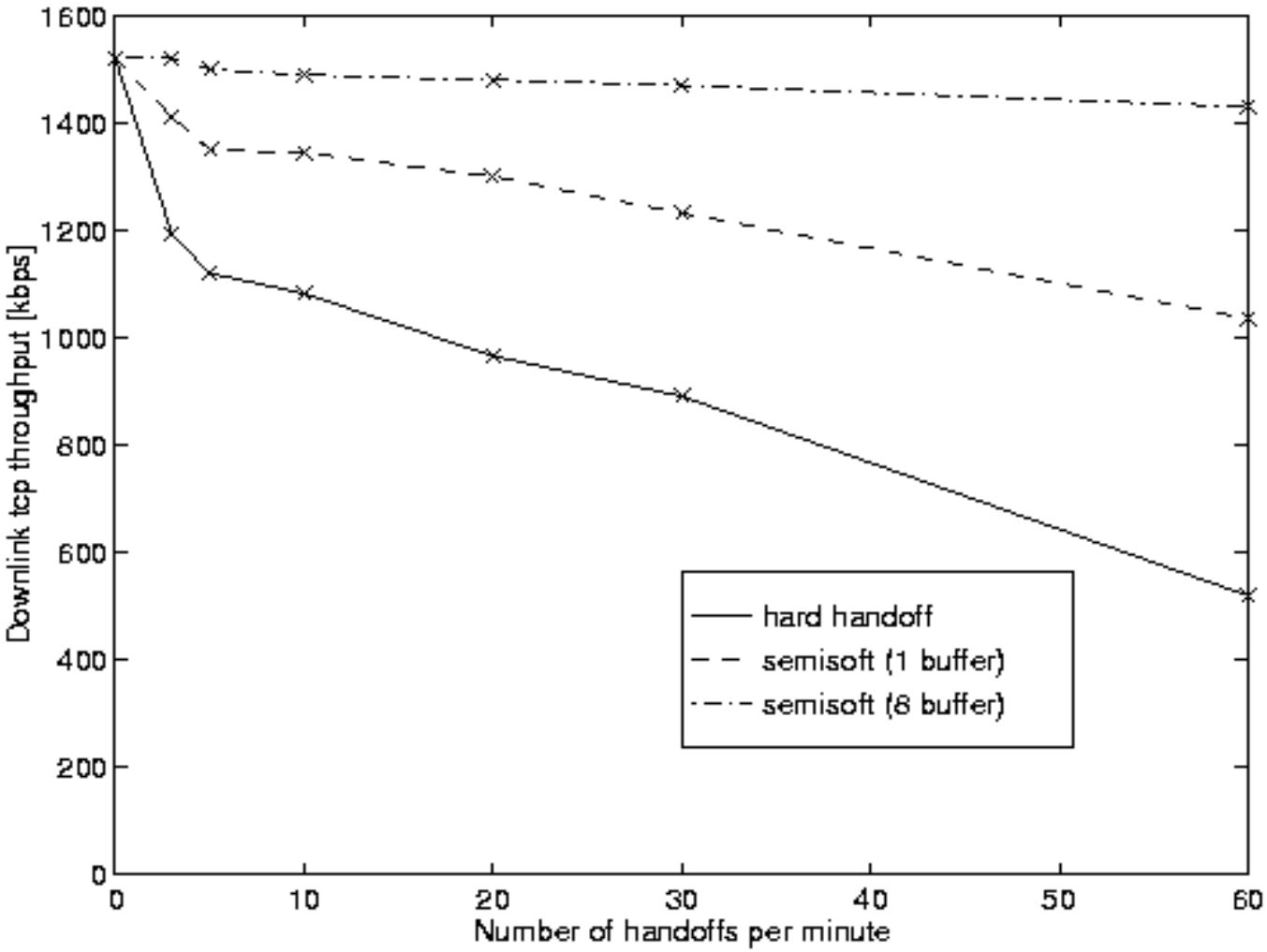
Handoff Performance/TCP

Wavelan 2 Mbps

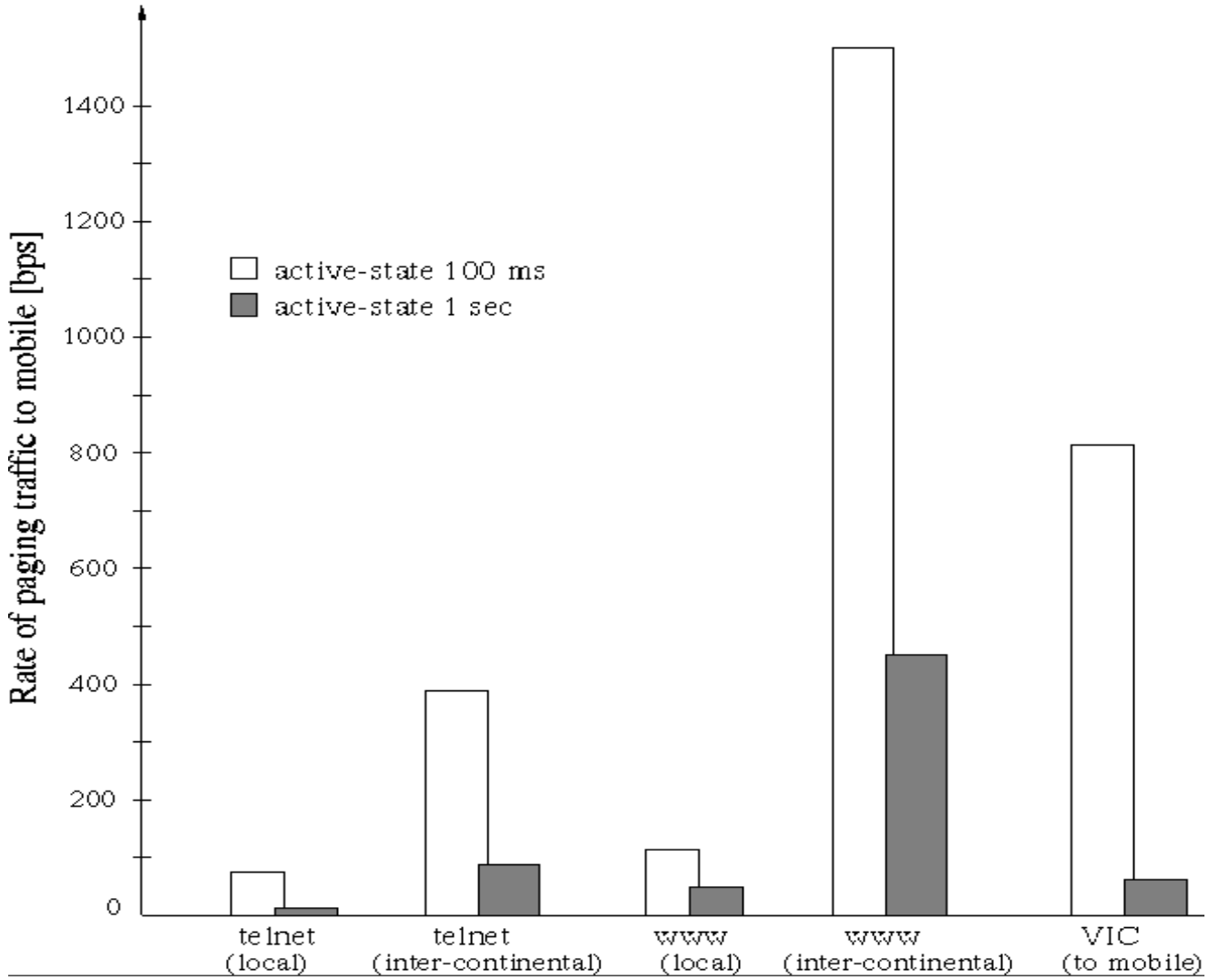
TTCP/ downlink traffic



Hard handoff: donwlink tcp



Active/Idle timeout performance

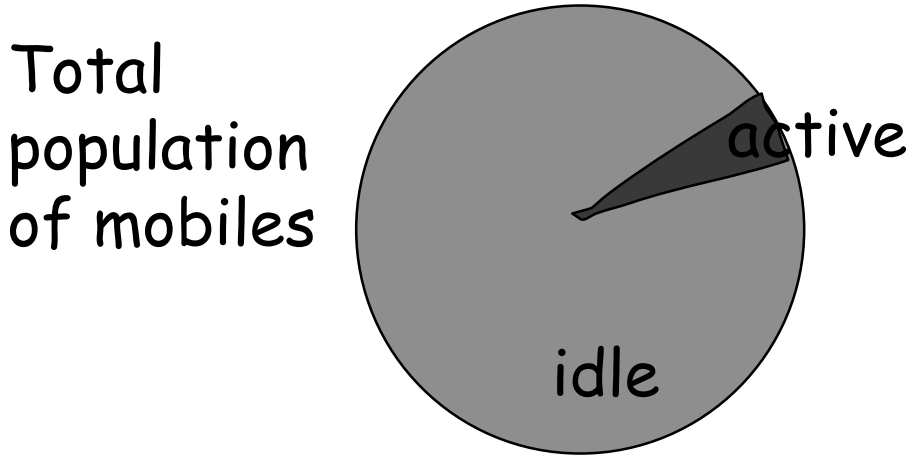


Scalability issues

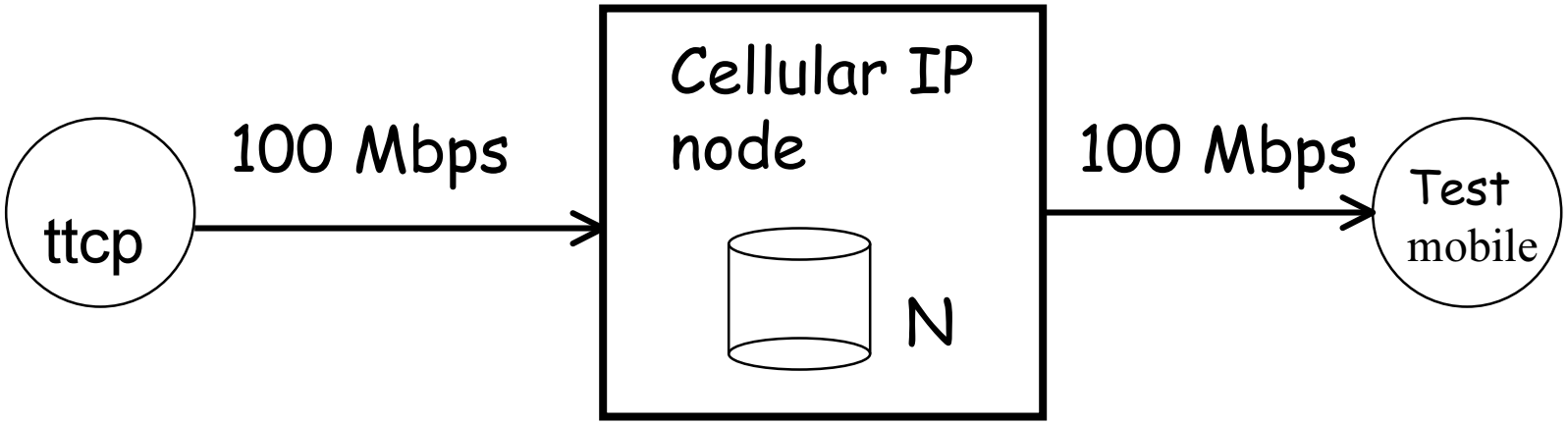
- Cellular IP uses per-host routes in order to support high performance handoff

Cellular IP achieves scalability by:

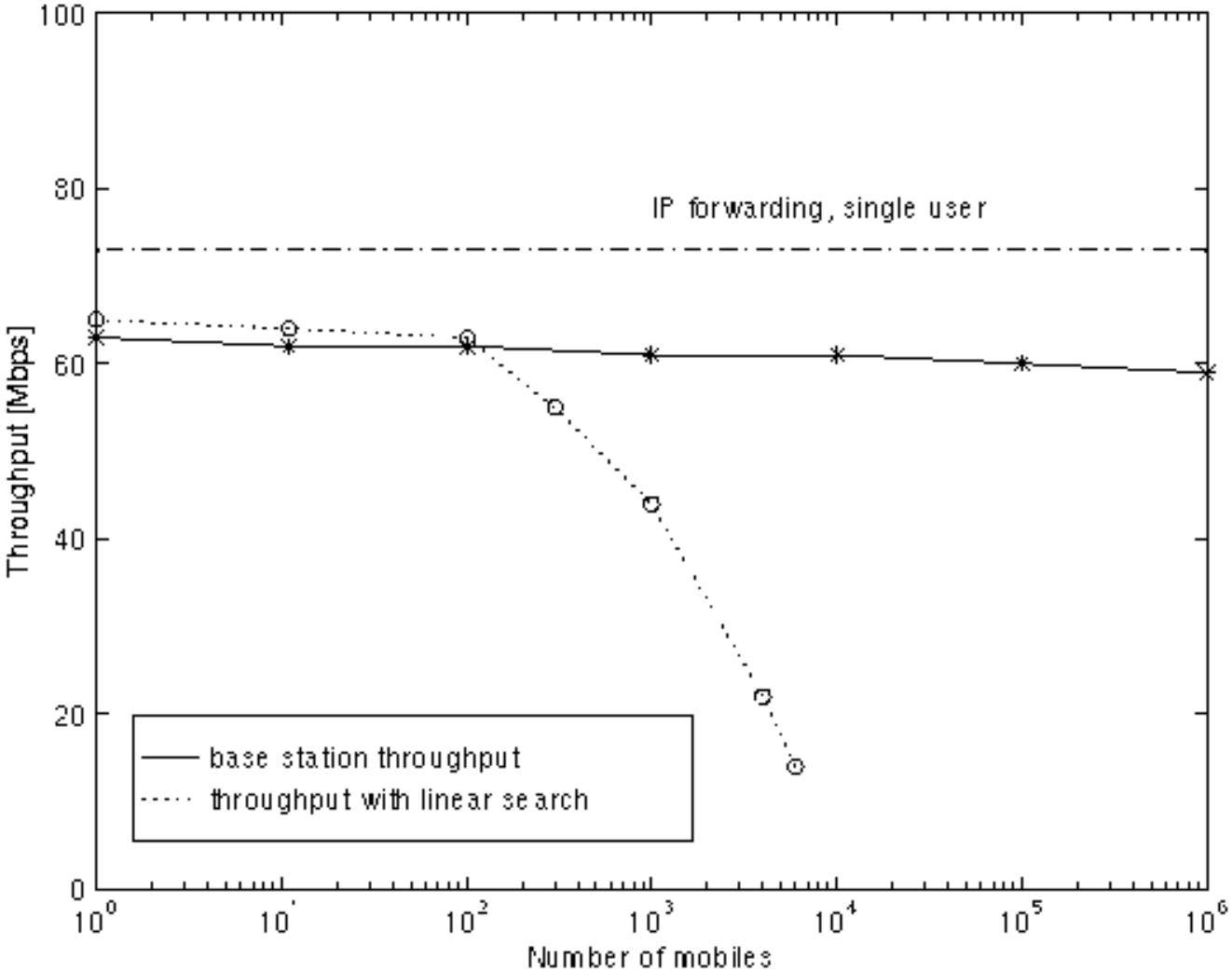
– separation of location management between idle/active mobile hosts



Scalability issues



Node's Throughput



Source code

comet.columbia.edu/cellularip