

The Center for Cyber Defenders

Expanding Computer Security Knowledge



Determining Wireless Perf. of Mobile Devices for Ad Hoc Networking

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Problem Statement:

Typically networks rely heavily on permanent infrastructure or only operate over limited areas. In emergency situations infrastructure may be inoperable. We investigate a possible alternative which enables emergency communication without relying on static infrastructure.

Objective and Approach:

Goals:

- Self-connecting network—Not pestering the user
- Send and receive messages at the optimal size and speed
- Measure throughput and latency
- Solve reliability problems

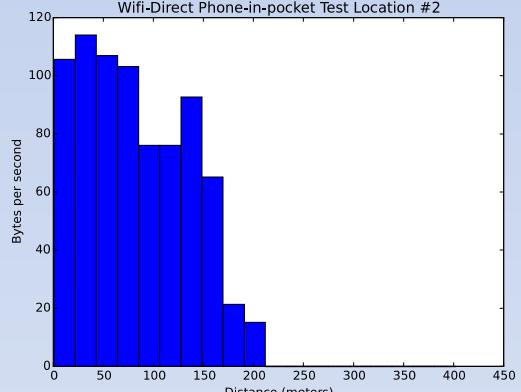
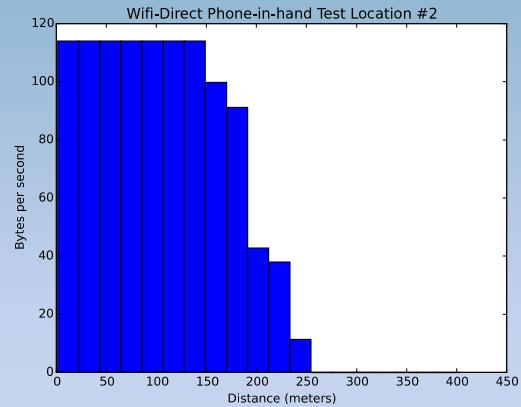
We developed an Android application which served as a testing platform for various local communication methods in various RF environments.



Example event locations recorded during data collection

Results:

We measured the performance of several techniques for ad-hoc / mesh networks at the link layer.



Impact and Benefits:

Our work provides necessary physical parameters for simulation. Accurate physical models allow for developing the protocols to achieve efficient ad hoc networking. This work is toward building an ad-hoc / mesh network application which works on mobile devices without requiring root access, jail-breaking, custom firmware, or custom hardware.