**DTN simulation:**
The Opportunistic Networking Environment (ONE) Simulator

*Ari Keränen*

*Jörg Ott*

DTNRG @ IETF 69, 24 July 2007

---

**The ONE Simulator**

- Visualizes the movement of nodes
- Generates connectivity data from mobility model
  - Can generate output e.g. for dtnsim2 and ns-2
- Supports internal and external routing
  - Can read dtnsim2's output of routing decisions
  - Contains implementations of different routing algorithms
- Visualizes message passing in the simulator
  - Simulator can be automatically paused on interesting events and uninteresting events can be filtered out
- Generates reports of connections and message passing
  - Simple logs of e.g. connection times
  - Graphs using Graphviz (adjacency, message paths…)
Simulator Overview

Components (1)

- Mobility Generation
  - Random Waypoint
    - "Random Helsinki Model" (map-based)
    - "Not-so Random Helsinki Model"
      - Communities, points of interests, ...
  - Node groups
    - Further steps to model behavior and motion
  - Interfaces to dtnsim2, ns2, ...

- Movement Models
  - Map-based movement
    - External trace
    - Random waypoint
    - etc...
  - WDRS
    - Connectivity data
  - Routing
    - External DTN routing sim (e.g. dtnsim2)
    - Internal routing logic
  - Visualization and results
    - Post processors (e.g. graphviz)
    - Graphs, charts, etc.
Components (2)

- Routing Core
  - Extensible for different routing/queuing schemes
  - Flooding, Epidemic, PRoPHET, Spray & Wait
  - More to come
  - Different mobility feeds
    - "Live feed from the mobility generator"
    - Accepts contact or mobility traces (e.g., CRAWDAD)

- Visualization
  - Interactive real-time visualization
  - Various trace files and summary reports
  - Graphing tools

Screenshots
Screenshots

Example reports
ONE Download (GPL)

http://www.netlab.tkk.fi/~jo/dtn/