PRoPHET Update

draft-lindgren-dtnrg-prophet-02.txt

Anders Lindgren
Avri Doria
Introduction

• Routing protocol for intermittently connected networks
  • Based on the use of *delivery predictabilities*, a metric that estimates the suitability of a certain node as a forwarder for a destination.

• Previous version presented at Paris IETF

• Focus on changes and new events in this presentation
Changes from -01

• Restructuring of the document to make it easier to read and use as reference when implementing.
  • Based on comments from implementors and external readers.
  • State tables added for various parts of the protocol to aid implementors.
  • Clearer separation between specification of message formats and the detailed operational description of how they are used.
  • Clearly specifying what is required from lower layers.
  • Removed various minor nits and ambiguities.

• Added optional optimizations/improvements regarding the treatment of delivery predictabilities
  • Averaging of delivery predictabilities to get smoother development over time.
  • Removal of very small values to reduce overhead.
More changes

• Neighbor discovery moved out from protocol
  • Allow protocol to use whatever neighbor discovery method that might be available on the network technology used.
  • If not available from lower layers, a beaoning neighbor discovery mechanism can be used (example given in appendix).
  • Can for example help save power (c.f. throwboxes)
  • Link up/down events from BF in new architecture?

• Security considerations section added
  • Discusses possible attacks on the protocol and possible approaches to solve them.
  • No conclusive solutions.
  • Should look more into the bundle security draft to use the same terminology.
Implementation Status

• Lego Mindstorms implementation
  • Very successful demo at MobiCom 2005
  • CDs with cool videos available for interested people
  • http://www.sm.luth.se/~dugdale/mobicom2005_final.avi

• Draft compliant implementation in OmNet++ simulator.

• Linux implementation in progress
  • Expected to be finished in June.

• Jeff Wilson?

• New architecture presented this morning seems promising
Future Plans

• Improved operation in partly connected networks and at high connectivity spots
  • Different options being explored.

• Real life deployment test (within SNC) this summer
  • Pilot deployment in the Laponia region in the north of Sweden to be done within the Saami Network Connectivity project.
  • August 2006
  • PRoPHET will be used for routing
  • E-mail, web caching used as applications
  • Lab environment testing to prepare for this in June/July
  • Anybody interested in field testing their applications are more than welcome to join us.
Some other related work at LTU

*Creation of mobility and contact pattern models*
  - Lots of simulations using random way-point or something else non-real
  - Recently more people feed real traces into their simulations
    - Good, but number of scenarios limited by the number of traces collected
  - Create models based on real traces, and use those in simulations
  - Not interested in models of mobility (i.e., position), but contacts
    - RealityMining, Haggle data sets

*Creation of interactive GUI tool for study of DTN trace properties*
  - Explores topological and dynamic properties of the contact traces.

*Johan Nykvist (johan@sm.luth.se)*