An Effective Queue Management Scheme for Opportunistic Networks
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Opportunistic Networks
- Supports communication between intermittently connected nodes by isolating delay with a store-and-forward technique
- Endorse mobility by custody transfer mechanism
- Utilizes hop by hop routing mechanism
- Prospective example: smartphones communicating each other forming such network

Motivation
- Unpredictable delay and store-carry-forward mechanism make congestion control and/or avoidance very important
- Lack of global knowledge turns available solutions unsuitable
- An effective queue management can avoid and/or control congestion in such cases
- Overall objective: Obtain better delivery ratio

A Queue Management Scheme

Three components of this scheme:

A. Weighted fair queuing
   Intermediate nodes store, rearrange & forwards bundles according to calculated weight

B. Early avoidance mechanism: If buffer is almost full, deny custody and accept message with higher weight

C. Exchange mechanism: Exchanges with less weight messages when buffer full

Preliminary Evaluation

- Partially implemented in Spray and Wait routing. Prophet routing module of One simulator.
- Compared this scheme’s performance with First-In-First-Out (FIFO) scheme.

Simulation criteria
- An urban scenario with 20 pedestrians, 5 buses and 5 taxis.
- All were mobile

Performance
- Better delivery ratio compared to FIFO
- Less overall number of dropped messages

Future work
- Full implementation of proposed scheme and compare with other more resembling schemes.
- A suitable early congestion avoidance algorithm