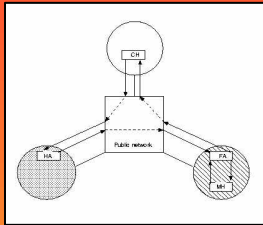


SIMULATION OF ROUTE OPTIMIZATION IN MOBILE IP

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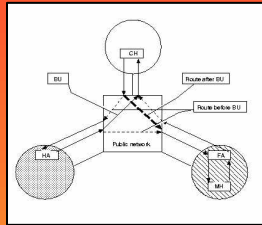
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MOTIVATION



Mobile IP and triangle routing

- Mobile IP: the mobility support for IP that enables an MH to send datagrams (routed by HA and FA) to the CH directly.
- Triangle routing: packets from CH to MH have to be routed through three different sub-networks: CH subnet, HA subnet, and FA subnet where the MH is currently located. Therefore, packets destined to the MH are often routed along paths that are significantly longer than optimal.



Route optimization in mobile IP

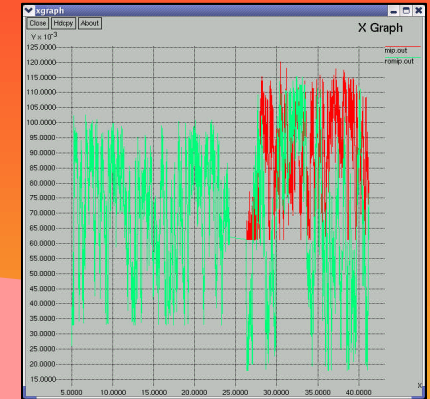
- Route optimization: extension of basic mobile IP, addressing the "triangle routing" problem by requiring all hosts to maintain a binding cache containing the care-of-address of MHS. It includes four messages: BU, BW, BR, and BA.

- MH: mobile host
- HA: home agent
- FA: foreign agent
- CH: correspondent host
- BU: binding update
- BW: binding warning
- BR: binding request
- BA: binding acknowledgement

RESULTS



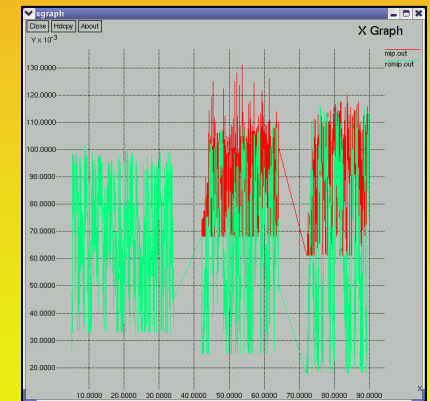
Average end-to-end packet delay



End-to-end packet delay

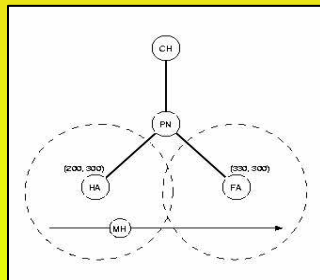


Average end-to-end packet delay

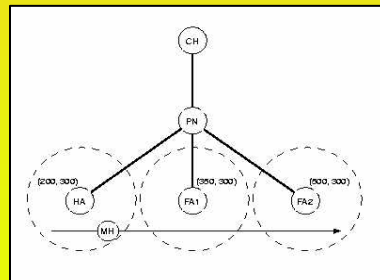


End-to-end packet delay

IMPLEMENTATIONS



Simulation scenario 1: one FA



Simulation scenario 2: two FAs

References:

- [1] C. Perkins, *IP mobility support for IPv4*, <http://www.ietf.org/rfc/rfc3220.txt> (January 2002).
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- [3] K. Fall and K. Varadhan (Eds.), *The ns manual*, <http://www.isi.edu/nsnam/ns/doc/index.html>.
- [4] Network simulator - ns-2, <http://www.isi.edu/nsnam/ns>.
- [5] P. Zhou and W. Yang, "Reverse routing: an alternative to MIP and ROMIP protocol," in *Proc. Canadian Conference on Electrical and Computer Engineering*, Edmonton, AB, Canada, May 1999, vol. 1, pp. 150-155.