

THREE RD MODELS FOR TWO-HOP RELAY ROUTING WITH LIMITED PACKETS
LIFETIME IN
AD HOC NETWORKS

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***Abstract:** We study mobile communication of networks, the ad hoc networks, Ad hoc networks are complex distributed systems that consist of wireless mobile or static nodes that can freely and dynamically self-organize. The parameters of the queuing models depends on the node mobility pattern.*

The main finding is that the expected relay buffer size depends on the expectation and the variance of the nodes contact time. Such analysis is done for the three dimensional random walks models over a circle, expected relay buffer size depends on the expectation and the variance of the nodes contact time.

First model- The source node transmits a packet only once (either to the relay or to the destination node). Thus, the source node does not keep a copy of the packet once it has been sent. When the source node transmits a packet to the destination node (when their locations permit such a transmission), the source node transmits packets that it has not transmitted before. The source node has always data to send to the destination node. This is a standard assumption, also made in [GMPS04, GT02, GK00], because we are interested in the maximum relay throughput of the relay node. This shows : first the relay node performs a Random walk and the source and destination are fixed, second the source, the destination, and the relay node move inside a square according to the RD model.

Second model- The relay node is moving according to a symmetric random walk (RW) on a circle of $4R + 2w$ steps.

Third model - Three nodes: a source a destination and a relay source, nodes are moving according a symmetrical Random Walk over a circle.

***Keywords:** Ad Hoc Networks, MANETs protocols, Routing protocols, packet, source node, Relay routing, finite memory, Relay Buffer (RB), RB occupancy, Destination*