Signal Strength Based Multipath Routing for Mobile Ad Hoc Networks

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Abstract : In this paper, we present a route discovery process which uses the signal strength on a link as a parameter of its inclusion in the route discovery method. The proposed signal-to-interference and noise ratio (SINR) based multipath reactive routing protocol is named as SINR-MP protocol. The proposed SINR-MP routing protocols has two following two features: a) SINR-MP protocol selects routes based on the SINR of the links during the route discovery process therefore it select the routes which has long lifetime and low frame error rate for data transmission, and b) SINR-MP protocols route discovery process is multipath which discovers more than one SINR based route between a given source destination pair. The multiple routes selected by our SINR-MP protocol are node-disjoint in nature which increases their robustness against link failures, as failure of one route will not affect the other route. The secondary route is very useful in situations where the primary route is broken because we can now use the secondary route without causing a new route discovery process. Due to this, the network overhead caused by a route discovery process is avoided. This increases the network performance greatly. The proposed SINR-MP routing protocol is implemented in the trail version of network simulator called Qualnet.