Geographic Routing in Large-Scale Highly-Dynamic Mobile Ad-Hoc Networks

Ben Newton, Jay Aikat, Kevin Jeffay
Department of Computer Science
University of North Carolina at Chapel Hill
Email: {bn, aikat, jeffay}@cs.unc.edu

Abstract—In the near future extremely large scale mobile ad-hoc networks of thousands or tens of thousands of mobile nodes will be physically feasible and desirable for a host of applications. However, routing within these networks is challenging, especially at high data rates and when node movement is highly-dynamic. In this work we present Topology Aware Geographic Routing (TAG), a position-based routing protocol which strategically uses local topology information (when available) to make better local forwarding decisions, decreasing the number of hops required to deliver a packet when compared with other geographic routing protocols. In addition TAG is able to reliably deliver packets even in topologies which violate the often used but unrealistic unit disk graph and quasi-static assumptions. We present empirical results from a variety of simulations, illustrating how TAG outperforms GOAFR+, GFG, and OLSR in both theoretical environments and in a simulated, real-world, continental-scale airborne network.

I. TEMP

Full document will soon replace this placeholder.