Security in Multihop Wireless Ad Hoc Network Routing

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An ad hoc network is a group of mobile computers (or nodes) using wireless network interfaces, in which individual nodes cooperate by forwarding packets for each other to allow nodes to communicate beyond direct wireless transmission range. Ad hoc networks require no centralized administration or fixed network infrastructure such as base stations, and can be quickly and inexpensively set up as needed. Examples of applications for ad hoc networks range from military operations and disaster relief, to community networking and interaction between attendees at a meeting. In this talk, I will describe the challenges of secure routing in ad hoc networks and will briefly present some of the work we are doing at Rice University in addressing these challenges. We consider both passive and active attackers, including cooperating attacking nodes and compromised nodes. Our goal is to develop techniques for making routing protocols for ad hoc networks highly robust against attacks, yet able to perform equivalent to the best existing non-secure ad hoc network routing protocols.