Abstract

Two vehicles, people, or objects (nodes) that encounter each other while in transit have an opportunity to share information. If the nodes are equipped with short-range communication radios, they may exchange data without the use of preexisting network infrastructure, provided that they are within transmittable range. A wireless network comprised of such nodes is characterized by encounters between the nodes, which occur randomly and are sustained for only short duration. The brevity of encounters pose unique challenges when designing wireless protocols for communications between highly mobile nodes. While the traditional transfer protocols that support the Internet are robust and reliable, they employ many additional services and safeguards that can be considered extraneous in networks that suffer from short encounter times. Furthermore, in vehicular networks, where two automobiles may pass one another on a freeway traveling at 60 mph, a transfer protocol like TCP may not succeed at establishing a connection before the encounter ends and the vehicles have moved out of transmittable range. In the following thesis, the Rapid-Link Transfer Protocol is presented. The wireless protocol is designed for the "Internet of Moving Things" and enables connections to rapidly be established between two nodes in order to maximize the number of files that can be exchanged in a single encounter.