A Scheme to Integrate On-Demand Multicast Route Protocol with Multipoint Relay and Multi-Channel MAC Protocol in Mobile Ad-hoc Wireless Network

Abstract:

Multi-Channel Media Access Protocol brings remarkable improvement in throughput to wireless network, but this kind of MAC protocol seldom provides support for multicast protocols. On-Demand Multicast Route Protocol with Multipoint Relay (ODMRP-MPR) is a mesh-based multicast protocol suited for ad-hoc network. This paper proposes a scheme to integrate a multi-channel MAC protocol and ODMRP-MPR protocol. This scheme adapts the MAC protocol to provide proper interface to multicast protocols and special process for multicast data. At the same time, ODMRP-MPR is extended to cooperate with multi-channel MAC protocol. We extend a special multi-channel MAC protocol based on CSMA/CA for adaptation, and then evaluate the performance of the integrated system for ad hoc networks via extensive simulation. By comparing to the performance of ODMRP-MPR on similar MAC protocol without multi-channel, we show the advantages of the integrating scheme.

Keyword: Ad-hoc, Multi-Channel MAC, Multicast, ODMRP