

RAMRP Protocol for Reliable Multicasting in Wireless Ad-Hoc Network Environments

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Abstract. In wireless ad-hoc network environments, packet retransmissions and route reconstructions caused by link failures can be more frequent than in the wired network environments. Therefore, new multicasting scheme reducing transmission delays and packet losses due to link changes of a multicast tree is required. In this paper, we propose a RAMRP (Reliable Ad-hoc Multicast Routing Protocol) protocol. It supports a reliable multicasting suitable for wireless ad-hoc networks by reducing the number of route reconstructions and packet retransmissions.

1 Introduction

Multicasting in wireless ad-hoc networks potentially has a trade-off between stability and efficiency. Since many other multicasting schemes in wireless ad-hoc networks depend on group member states managed by the mobile hosts for route construction and packet transmission, those schemes cause heavy control traffic and also require a lot of time for routing:[1]. There are well-known multicast routing protocols such as AMRIS:[2], ODMRP:[3], and AmRoute:[4]. And now, an enhanced multicasting scheme improving both stability and efficiency is needed.

In this paper, we propose a RAMRP protocol that uses a link soundness based route construction method and an agent based ACK strategy. It can provide a reliable multicasting environment in wireless ad-hoc networks. The next section describes a system model and algorithms for our protocol. In section 3, we present the performance analysis with simulations. Finally, the last section discusses our conclusions and areas of future works.

2 RAMRP Protocol

2.1 System Model

Each node in wireless ad-hoc networks is classified into a member node or a non-member node. Member nodes construct a multicast tree with a sender as a center