

# ANALYSIS OF MULTICASTING ON TOLERANT NETWORK IN WIRELESS COMMUNICATION

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## ABSTRACT

In this paper, we study the problem of *multicasting* in TNs(Tolerant Networks). Tolerant networks are a class of emerging networks that experience frequent and long-duration partitions. These networks have a variety of applications in situations such as crisis environments and deep-space communication. Multicast supports the distribution of data to a group of users, a service needed for many potential TN applications. While multicasting in the Internet and mobile ad hoc networks has been studied extensively, due to the unique characteristic of frequent partitioning in TNs, multicasting in TNs is a considerably different and challenging problem. It not only requires new definitions of multicast semantics but also brings new issues to the design of routing algorithms. In this paper, we propose new semantic models for TN multicast and develop several multicast routing algorithms with different routing strategies. We present a framework to evaluate these algorithms in TNs. To the best of our knowledge, this is the first study of multicasting in TNs. Our objectives are to understand how routing performance is affected by the availability of knowledge about network topology and group membership and to guide the design of TN routing protocols. Using *ns* simulations, we find that efficient multicast routing for TNs can be constructed using only partial knowledge. In addition, accurate topology information is generally more important in routing at TN environment than up-to-date membership information. We also find that routing algorithms that forward data along multiple paths achieve better delivery ratios, especially when available knowledge is limited.

**KEYWORDS:** Multicast, Delay Tolerant Networks, Semantic Model.