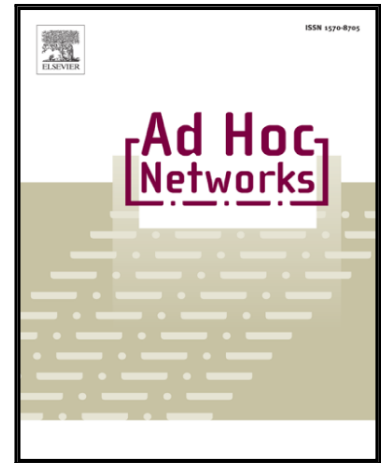


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Group Centric Networking: A New Approach for Wireless Multi-Hop Networking

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Abstract

In this paper, we introduce a new networking architecture called Group Centric Networking (GCN), which is designed to support the large number of devices expected with the emergence of the Internet of Things. GCN is designed to enable these devices to operate collaboratively in a highly efficient and resilient fashion, while not sacrificing their ability to communicate with one another. We do a full protocol implementation of GCN in NS3, and compare GCN against different MANET routing approaches in both simulation and on a 90 node Android mobile phone testbed. We show that GCN utilizes up to an order of magnitude fewer network resources than traditional wireless networking schemes, while providing superior connectivity and reliability. The GCN source code is open-source and publicly available.

1. Introduction

Despite decades of effort, multi-hop wireless networks have not succeeded in fulfilling their once-promised potential of providing ubiquitous connectivity with minimal fixed infrastructure. Today, almost all of our wireless devices are

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