

A Survey on Scalable Multicasting in Mobile Ad Hoc Networks

Mohammad M. Qabajeh · Aisha H. Abdalla ·
Othman O. Khalifa · Liana K. Qabajeh

Published online: 22 August 2014
© Springer Science+Business Media New York 2014

Abstract Mobile ad hoc networks (MANETs) have gained significant interest and popularity since they have enormous potential in several fields of applications. Infrastructure-free, self-configuring and mobility are the main reasons behind this popularity. Recently, group-oriented applications over MANET gains high popularity. Multicast communication is the ideal communication technique for supporting these types of applications. However, multicast routing in large-scale networks faces several difficulties and challenges that need to be addressed. These challenges include dynamic MANET topology, multicast packet forwarding and shared wireless medium. During the last years, active research work resulted in a variety of proposals. A number of protocols, each with a particular property and often optimized for a specific application area, have been designed. They follow different design principles and exhibit substantial variations in performance depending on various parameters. In this paper, most of the existing scalable multicast routing protocols in MANETs are briefly discussed and analyzed to provide a comprehensive understanding of these protocols and pave the way for further research.

Keywords MANETs · Ad hoc networks · Multicast routing · Survey · Position-based · GPS

M. M. Qabajeh (✉)
Department of Computer Science, Palestine Technical College (Al-Arroub), Hebron, Palestine
e-mail: m_qabajeh@yahoo.com

A. H. Abdalla · O. O. Khalifa
Department of Electrical and Computer Engineering, International Islamic University Malaysia,
Gombak, Malaysia
e-mail: aisha@iium.edu.my

O. O. Khalifa
e-mail: khalifa@iium.edu.my

L. K. Qabajeh
Faculty of Information Technology and Computer Engineering, Palestine Polytechnic University,
Hebron, Palestine
e-mail: liana_tamimi@ppu.edu