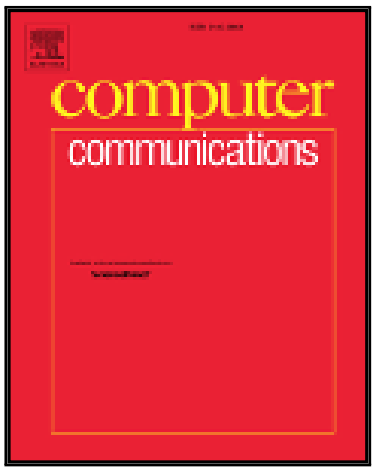

Practical Opportunistic Content Dissemination Performance in Dense Network Segments

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Practical Opportunistic Content Dissemination Performance in Dense Network Segments

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Abstract

Many of the existing opportunistic networking systems have been designed assuming a small number links per node and have trouble scaling to large numbers of potential concurrent communication partners. In the real world we often find wireless local area networks with large numbers of connected users – in particular in open Wi-Fi networks provided by cities, airports, conferences and other venues. In this paper we build a 50 client opportunistic network in a single Wi-Fi access point and use it to uncover scaling problems and to suggest mechanisms to improve the performance of single segment dissemination. Further, we present an algorithm for breaking down a single dense segment dissemination problem into multiple smaller but identical problems by exploiting resource (e.g., Wi-Fi channel) diversity, and validate our approach via simulations and testbed experiments. The ability to scale to high density network segments creates new, realistic use cases for opportunistic networking applications.

Keywords: Dense wireless networks, opportunistic networking, performance analysis, wireless testbed

1. Introduction

Trace analysis has shown that human mobility is characterized by large periods of time spent in dense clusters and infrequent flights between the clus-

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