Incentive Mechanisms in User Provided Networks

by

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All interested are cordially invited.

ABSTRACT:

Mobile data traffic is rapidly growing due to the proliferation of the mobile devices that need the Internet access, on the other hand, the mobile devices have become more capable together with technological improvements. This reveals the concept of User Provider Network which is based on sharing the users' Internet connections. According to this approach, users with cellular connection share their own connections with other users with limited or no cellular connection. However, in such services, one of the key issues is the users' willingness to contribute. Energy consumption and data usage costs are of critical importance and have a large impact on users' decisions for both requesting and offering UPN services. Recently, some incentive mechanisms are proposed for this purpose but they are usually not based on realistic parameters in terms of energy cost and utility modeling. In this work, we introduce some realistic energy and data rate models, after performing extensive set of experiments and applying various regression methods. Furthermore, we provide a realistic sequential bargaining model based on energy and data rate estimations. In the proposed system, incentives are given by the mobile network operator as virtual currencies, according to the bargaining of users and experienced quality of service. We implement the proposed system in a real environment and show its effectiveness in various scenarios.

BIOGRAPHY:

Ömer Korçak received his B.S. (with high honors), M.S. and Ph.D degrees all in Computer Engineering from Bogazici University, in 2002, 2004, and 2009 respectively. Currently, he is an assistant professor and vice chair in Marmara University, Computer Engineering Department, Istanbul, Turkey. In 2011, he worked as a visiting researcher at Deutsche Telekom Laboratories, Berlin. His main research interests are in the general area of network optimization, network economics and game theory, with applications to wireless and broadband networks.