The University of New South Wales

Faculty of Engineering
School of Electrical Engineering & Telecommunications

ACoRN
ARC Communications Research Network

Invited Lecture

Multi-hop Delay Performance in Wireless Mesh Networks

Dr. Yang Yang

Lecturer

Department of Electronic & Electrical Engineering

University College London, UK

Date: 29 September 2009, Tuesday
Time: 2:00 pm – 3:00 pm
Venue: G3, Electrical Engineering Building

Abstract

Wireless Mesh Network (WMN) technology is an attractive solution to meet the demand of broadband network access anywhere and anytime. In order to effectively support delay sensitive applications such as video streaming and interactive gaming in a WMN, it is crucial to develop feasible methodologies and techniques for accurately analyzing, predicting and guaranteeing end-to-end delay performance over multi-hop wireless communication paths. In this talk, we extend the link-layer effective capacity (EC) model and derive a lower bound of delay-bound violation probability, or complementary cumulative distribution function (CCDF), over multi-hop wireless connections. A fluid traffic model with cross traffic and a Rayleigh fading channel with additive Gaussian noise and Doppler spectrum are considered in our study. The average multi-hop delay and jitter performance bounds are also obtained. Analytical results are verified by extensive computer simulations under different traffic load and wireless channel conditions. We find that multi-hop delay performance is much more sensitive to traffic load and maximum Doppler rate than traffic correlation.

Dr. Yang received the BEng and MEng degrees in Radio Engineering from Southeast University, Nanjing, P. R. China, in 1996 and 1999, respectively; and the PhD degree in Information Engineering from The Chinese University of Hong Kong in 2002. He is currently a Lecturer with the Department of Electronic and Electrical Engineering at University College London (UCL), United Kingdom. His general research interests include mobile ad hoc networks, wireless sensor networks, wireless mesh networks, third generation (3G) mobile communication systems and beyond, dynamic radio resource management (RRM) for integrated services, cognitive radio and networks, cooperative communications, and medium access control (MAC) protocols.

* * * * * **ALL ARE WELCOME** * * * * * **For ENQUIRIES:** Dr. Wei Zhang (Ph: 9385 4033)