

Research Work in Radio Resource Management in 4G Mobile Networks

A/Prof Sandy K.Sandrasegaran

Summary

Long Term Evolution (LTE) is emerging as a truly global standard for mobile communications. The goal of LTE was to increase the capacity and speed of mobile data networks (up to downlink 300 Mbps and uplink 75 Mbps) and reduce delay (max 5ms). To achieve this goal, it uses a number of techniques: OFDMA on the downlink and SC-FDMA on the uplink, supports scalable carrier bandwidths from 1.4 to 20 MHz and both FDD and TDD, improved radio resource management, channel dependent scheduling and link adaptation, MIMO, improved QoS support, simplified network architecture to reduce latency, and backward compatibility with 2G/3G mobile networks. GSA (Global Mobile Suppliers Association) reports that by May 6 2014, 288 LTE networks have been commercially launched in 104 countries in 800 MHz, 1800 MHz or 2.6 GHz bands. Furthermore, firm commitments to deploy LTE networks have been made in 150 countries by 497 network operators. In Australia, Telstra, Optus and Vodafone have launched LTE networks.

LTE Advanced is a mobile communication standard that is an evolution and a major enhancement of LTE and is referred to as "True 4G". It was standardized by the 3rd Generation Partnership Project (3GPP) in March 2011 as 3GPP Release 10. It enhances the LTE through a number of mechanisms such as carrier aggregation, COMP, and relaying.

In this seminar, A/Prof Sandy K Sandrasegaran will be presenting research work carried out at the Centre for Real-Time Information Networks (CRIN) in the area of Radio Resource Management in 4G Mobile Networks. The seminar will be discuss the following topics

- a) Introduction to LTE, LTE-A and RRM
- b) Packet scheduling algorithms in LTE and LTE-A
- c) Handover algorithms in LTE and LTE-A
- d) Link adaptation in LTE.
- e) Interference mitigation techniques in LTE and LTE-A.

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Dr Kumbesan Sandrasegaran is an Associate Professor at the Faculty of Engineering and IT, and the Centre for Real-Time Information Networks (CRIN) at University of Technology Sydney (UTS). He holds a PhD in Electrical Engineering from McGill University (Canada)(1994), a Master of Science Degree in Telecommunication Engineering from Essex University (1988) and a Bachelor of Science (Honours) Degree in Electrical Engineering (First Class) (1985). He was a recipient of the Canadian Commonwealth Fellowship (1990-1994) and British Council Scholarship (1987-1988). His current research work focuses on two main areas (a) radio resource management in 4G mobile networks, (b) engineering of remote monitoring systems for novel applications with industry through the use of embedded systems, sensors and communications systems. He has published over 100 refereed publications (1 book, 5 book chapters, 15 journal and 82 conference papers) and 20 consultancy reports spanning telecommunication and computing systems.

