Performance analysis of coordinated multipoint (CoMP) in long term evolution-advanced

ABSTRACT

Coordinated Multipoint (CoMP) is a new technique introduced in Long Term Evolution-Advanced (LTE-A) to address the inter-cell interference especially the one experienced by cell-edge user. It may also improve the overall capacity of the network. When a user approaches the cell edge, CoMP will be implemented and a CoMP set of multiple eNodeBs will be formed to start packet transmission in a coordinated manner. Nevertheless, the implementation of CoMP has its own cost. The focus of this paper is to analyze the impact of CoMP, in particular on user throughput, spectral efficiency and transfer time. Given the rise of potential problems such as capacity limitation and backhaul latency, the advantages and disadvantages of CoMP are critically evaluated. A generic analytical equation is developed and further improved for simulation purposes. From performance evaluation, we found that CoMP may improve the aforementioned performance parameters subject to properly defined threshold value.

Keyword: Coordinated multipoint; Long term evolution-advanced; Spectral efficiency; Throughput; Transfer time