

ABSTRACT

Physical Resource Block (PRB) allocation is an important part that must be set so well so all users can be served by eNode-B in downlink LTE network. One of the optimization methods can be applied by resource scheduling algorithm to allocate PRB to the user based on channel and capacity conditions.

This study aims to produce a new resource scheduling algorithm that have the best performance capacity. The algorithms are used in this simulation such as Round Robin, Modified Round Robin, Maximum Channel State Information (CSI) and Proportional Fair. The performance capacity parameters are indicators of algorithm performance like spectral efficiency, average user throughput, eNode-B throughput and eNode-B payload. With appropriate scheduling algorithms will increase spectral efficiency and user throughput to improve quality of service. Knowing the condition of channel capacity aims to maintain quality of service sustainably.

Different resource scheduling algorithm will produce different performance. In the Round Robin algorithm has method that each user who occupies the channel first or first active will be the top priority to obtain the resource block. In Round Robin Algorithm, the resource blocks allocation does not consider the channel conditions. The users does not chose the best channel condition so the spectral efficiency is not the maximum value. Then the Round Robin algorithm has been modified to produce more maximal spectral efficiency. Some modifications have been done by scheduling resource based on priority scheme. Initial condition, users will send channel state information (CSI) value to eNode-B and eNode-B store CSI data into matrix and compile it. The CSI value will be used as a consideration for scheduling resource blocks. Users who have the highest or best CSI and occupy the channel first or first active will be the first priority who are allocated resource block. In varied users (1-50 users), Modified Round Robin has the highest spectral efficiency, average user throughput, eNode-B throughput and eNode-B payload that compared to other algorithms. The spectral efficiency is 4.892 bps/Hz, average user throughput about 0.88 Mbps, eNode-B throughput about 44.031 Mbps and eNode-B payload about 158.512 Gigabits.

Keywords: LTE, Physical Resource Blok (PRB), Modified Round Robin, Maximum CSI, And Proportional Fair