

## ABSTRACT

The longer the need for communications needs because telecommunication operators must provide more telecommunication services maximum. XL Axiata as one of the largest telecommunication company in Indonesia. XL Axiata will add frequency for additional product capacity.

This final project discusses the planning of North Jakarta's 4G network in terms of capacity expansion by widening the working frequency from 15 MHz to 20 MHz. As a result of this addition can also be seen from the side of additional statistical measurement of download speed of each customer and decrease of DRR utilization during rush hour. Then also can be calculated customer number and capacity of cell before and after.

After adding 4G LTE network capacity by increasing frequency, it can improve the quality of telecommunications services. Payload obtained an average of 3.18 Tera Bit or an increase of 6.71%. Throughput from measurements after capacity addition is obtained by an average of 5.06 Mbps or an increase of 104.03%. Utilization PRB obtained by 39.39% or decreased by 29.76%, so operators can increase profits.

Keywords: Capacity, 4G, *Payload*, *Throughput*, *PRB Utilization*