

## ABSTRACT

Recently, internet had been the most popular technology and data communication network for some social class in Indonesia. However, internet access in Indonesia is restricted on speed and expensive cost. As the speed for video streaming, game online, download, upload file requirements and the other multimedia access, 56 kbps seems very slow. Then, it is needed a technology to speed up internet access. The users want larger data transfer capacity so that they can use internet application properly. Therefore, DSL system is the best alternative technology which is suitable speed up data transfer access in subscriber lines.

Nowadays, a VDSL system is known as the last DSL technology series and has the highest data transfer speed. Considering the network condition in Indonesia which is still dominated by copper cable network, especially in local access, VDSL is the alternative technology for transmission media in multimedia services.

Discrete Wavelet Multitone is used by VDSL signal modulation technique for multicarrier. DWMT is the development from DMT multicarrier modulation by changing *Discrete Fourier Transform* with *Discrete Wavelet Transform* for modulation and demodulation the *carrier*.

Performance Analysis of DWMT System on VDSL Technology is done in two step. First, DWMT system is made by differing the type, the level, and the order of Wavelet with constant QAM constellation for each sub channel. The DWMT system is also made with the variation of QAM constellation and N sub channel and the variation of Wavelet type, but with constant level and order. Second, DWMT system is simulated with Bit Loading Algorithm and Energy and Bit Optimizing.

Key words : *Discrete Wavelet Multitone (DWMT), Wavelet, Multicarrier.*