Abstract

xDSL Technology are being used more widely as an alternative technology for last-mile broadband internet access. Their benefits include ease of deployment and lower cost for incumbent operator with nation wide copper network. Such networks are not without problems. Implemented VPN IP services with IPDSLAM for last mile technology, introduced some problems such as management bandwidth, QoS and link stability.

The focus of our research is for achieving fairness bandwidth in implemented IPDSLAM for last mile technology VPN IP services. First, we review the literature for different characteristic between TDM based and IP based last mile technology. Second, we measure characteristic of management bandwidth (IP DSLAM setup profile) with throughput test result. Third, by adopting the throughput test result per IPDSLAM setup profile, we defined formula of management bandwidth. Fourth, with that formula we do tuning management bandwidth per VPN IP services and we measure link performance of IPDSLAM. We simulate various network configurations with different type of IPDSLAM and with variant condition such as frame size, line attenuation and QoS function to evaluate the performance of the fairness based on formula management bandwidth scenarios.

We have found that in IPDSLAM environment, we should add 12% bandwidth of setup profile to get 100% throughputs. For variant type IPDSLAM and condition this result is constant. QoS function running well in IPDSLAM if DSL modem support this function. For link stability performance monitoring, we can using tools EMS IPDSLAM to measure accurately parameter line rate, line attenuation and SNR.

These three parameters, is our performance indicator for implemented IPDSLAM as a last mile technology of VPN IP services. Experimental results that validate these findings are presented in this thesis.

***Keywords** :VPN IP services, IPDSLAM, bandwidth, QoS and link performance*