ABSTRACT

The fast development of internet and multimedia application require special network management requirements. But, TCP/IP network is not designed to transmit multimedia application which is realtime. MPLS technology comes to improve the network without significantly change the infrastructures and sacrificing the scalability of its network. MPLS technology will shortened the time when packets are in the system. It is because every packet is labelled which is used as information to switch the packet to the other routers.

In this final project, a simple network backbone is simulated using Network Simulator-2 with various load traffic which is could affect the performance of the network. This simulation also compares the performance of the network using MPLS and without using MPLS. The parameters which are obtained are *throughput*, *packet loss*, and *network utilisation*.

The results of the simulation show the descent performance of the non MPLS network when the load traffic are raising. But, when the network is using MPLS, the descent is as not as significant as the network without MPLS. In other words, MPLS network gives performance improvement, especially on *throughput*, *packet loss*, and *network utilisation*.