

Abstract

This final project thesis is titled "Algebra And Algorithm Analysis For QoS Path Computation On Hop-by-hop Routing In The Internet". It will cover on how the routing algorithm with implementations of algebra properties doing QoS path construction.

The growth in internet users, increase the need of more capable traffic system. The main motive of the reliable traffic is network capabilities to transmit multimedia messages. These services need the right path selection in order to transmit the traffic through the network. Right *QoS* can be acquired by computing delay. To achieve desirable delay, packets can be past through shortest path which links have maximum capacities. QoS Path with such characteristics named lexicographic lightest path (widest-shortest path). Due to that reason, we need the routing algorithm so the applications can be transmitted according to the specified *Quality Of Services (QoS)*. Verification method apply to re-examine theories and explorative method to make further development of the algorithm.

Network consists of links' capacities and set of nodes, these are the data used as inputs. Routing algorithm computes capacities and nodes. Multimedia applications need a path with acceptable capacity and optimal cost. These parameters lead to the need of algorithm that compares the link capacities and cost parameters to construct the path. Dijkstra's algorithm can not be used to those specifications, to meet the demand, it needs to be modified with strict isotonicity property of algebra with binary operation and order relation. Dijkstra-Old-Touch-First Algorithm produces lexicographic-lightest path on hop-by-hop routing in the internet.