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Design, Implementation and Evaluation of an OSPF-based Routing Protocol for Multipath Transfer and Multipath TCP in the Future Internet

ABSTRACT - Masterthesis

Evolution of Internet and its services have played an important role in the implementation of various types of communication all across the world; including services to all aspects of technology, business, and eventually day to day life requirements. Optimum network resource utilization to deal with network congestion in present time is one of the biggest challenges faced by various research, development and monitoring network groups or organizations. IETF research group has proposed various solutions for improving the quality of service of internet communication. In this thesis work such solutions have been analyzed that are based on TCP/IP stack layer3 (Network layer) and layer4 (Transport layer) solutions. Layer3 solutions enhance the performance within the network by managing the network resources efficiently, which in turn enhance the performance of end to end TCP/IP connections. Layer4 solutions, on the other hand, try to enhance the performance of TCP/IP connections at end hosts by assessing the network conditions. In this thesis work such a solution called OSPFxQoS-LSFM has been proposed and presented. This solution has been developed with an aim to optimize the utilization of network capacity by avoiding network congestion. The proposed solution is based on layer3 routing protocol OSPF with extension to Quality of Service.