Abstract

Label Switching in Multi-Protocol Label Switching Networks is a most researched area in recent years. Many techniques have been proposed and implemented and their merits and demerits have been considered. Label Space Reduction is an issue which directly affects the quality of service of the MPLS network. The aim of the work is to design a network which optimizes the quality of service parameters like packet delivery ratio and throughput of the network. In many previous works tunnels are created which deals in only one label for the tunnel instead of swapping labels at each Label Switch Router (LSR). But the entry and exit points inside the tunnel are fixed which makes it difficult for the packets to enter and exit the tunnels. Also the packets entering will have to exit at fixed point and then it follows some other route to reach the destination which only increases the end to end delay and the packet drop in the network. In our proposed approach LCS algorithm is used to find the length of the tunnel according to the number of Label Switched Paths (LSPs) so that the packet can enter into the tunnel and exit at any point in the tunnel. Also each LSR maintains a table so that it tracks the labels which are assigned to the packets entering the tunnel and exiting at any point over the length of the
tunnel. This technique results in the reduced number of packets lost in the network and also
delay is reduced thus improving the throughput of the network. The results shown in the coming
sections also proves the approach and the labels are significantly reduced along with the
improvement of other performance parameters like throughput of the network, end to end delay
and the packet delivery ratio.

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Index Terms

Computer Science  Networks

Keywords

MPLS, LDP, LCS, Shim, LSR, QoS, Label.