A Scheduling of Switch Ports for IP Forwarding

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Abstract

With the increase of internet protocol (IP) packets the performance of routers became an important issue in internetworking. In this paper we examined the matching algorithm in gigabit router which has input queue with virtual output queueing.

Port partitioning concept is employed to reduce the computational burden of the scheduler within a switch. The input and output ports are divided into two groups such that the matching algorithm is implemented within each group in parallel. The matching is performed by exchanging input and output groups at every time slot to handle all incoming traffics. Two algorithms, maximal weight matching by port partitioning (MPP) and modified maximal weight matching by port partitioning (MMPP) are presented. MMPP has the lowest delay for every packet arrival rates. The throughput is illustrated to be linear to the packet arrival rate, which can be achieved under highly efficient matching algorithm.