

Development of a scheduler for quality of service support in IP networks

Abstract

The current IP-based networks are described as best effort. When a packet arrives at a router, the router looks at the destination address, checks with the routing-table entries, then selects the best match and sends the packet to the output queue. The routing is dynamic where the packets in a single flow may take different paths to the destination. Also packets in the output queues are serviced based on first-come-first-serve order. The best effort mechanism of the IP-based networks worked very well in an end-to-end data transfer environment, which contributes to the success of the Internet this far. However, to support real-time multimedia applications over the IP-based networks such as streaming video, IP telephony, Internet radio, teleconferencing, interactive games, etc, would require necessary services that could guarantee the end-to-end delay required by the applications. New service architectures have been recently introduced to support real-time multimedia networking in IP-based networks. Differentiated services (DiffServ) architecture combined with multi protocol label switching (MPLS) have become a promising mechanism of achieving quality of service (QoS) with the scalability required by the Internet. Scheduling mechanisms at the network nodes can give fairness and protection according to the requirements of the traffic. This paper proposes a dynamic scheduler based on fuzzy logic at the DiffServ-enabled MPLS edge node. The fuzzy logic scheduler uses the maximum bandwidth allocation scheme.