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(54) RATE GUARANTEES THROUGH BUFFER MANAGEMENT

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(57) ABSTRACT

A method of providing a rate guarantee to individual or groups of flows in a router through intelligent management of buffers. Rate guarantees are provided by intelligently allocating and isolating the buffers available to each flow. In its most basic form, the method applies to output queued network devices with a simple FIFO scheduler, where a number of streams some with rate reservations are sought to be multiplexed onto an outgoing link. The method involves strictly partitioning the buffer into portions strictly reserved for each flow in proportion to its link reservation. This ensures that each stream obtains the link reservation rate in a scalable manner. A particular embodiment of the invention allow for a portion of the buffer to be strictly partitioned while allowing streams full access to the remainder of the buffer. Other embodiments utilize the use of a link scheduler to divide bandwidth amongst a number of queues, while using buffer management to facilitate bandwidth amongst a number of flows in each queue.

52 Claims, 10 Drawing Sheets

