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## **Method of filtering tables design for ultra-fast switching for systems with limited resources**

Abstract:

The report discusses designing of the frame filtering tables in distributed computing or telecommunication systems. The proposed method of filtering tables design can reduce the time of frame processing by network bridges and switches and provide a low probability of filtering table overflowing. We have studied the new method and determined optimal distributing of memory amount for table allocating.

Also we discuss the energy efficient of devices in dependence on filtering table design. Hash table is a common approach to build associative arrays, database indexes and various kinds of program-defined caches. Our approach allows to design ASIC to perform function of fast search in associative arrays. It leads to significant decreasing power consumption. Moreover, hashing techniques are suffered from large probability of collision in the case of hash size acceptable for mobile devices. This makes it necessary to perform additional energy-inefficient memory access operations to resolve these collisions. We propose hashing technique with lower probability of collision for the hash of the same size. We show that unlike existing collision free approaches our hashing method has a much broader area of applicability. To support these claims both theoretical and experimental studies are presented. Experimental comparison with existing approaches has shown significant improvement of energy-efficiency for common applications.