

Packet Reservation Multiple Access (PRMA) With Random Contention

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Summary

Packet reservation multiple access (PRMA) can be considered as a merge of slotted ALOHA protocol and time division multiple access (TDMA) protocol. Independent terminals transmit packets to base station by contending to access an available time slots. A terminal that succeeds in reserving a certain time slot keeps on this reservation for transmitting its subsequent packets. Speech activity detection is used in PRMA to improve system capacity. In this work we propose a simpler contention mechanism that does not depend on a predetermined permission probability as in the original PRMA. In the new method, terminals select the contention slot uniformly from the pool of remaining free slots in the current frame. We evaluate the performance of the new contention mechanism in terms of various metrics including maximum number of carried voice calls and packet delays for a given acceptable drop rate of voice packets. We show that the new mechanism is superior to that of the original PRMA for loaded systems and is expected to be insensitive for traffic source burstiness.

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