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Multiaccess Protocols in Packet Communication Systems

Publisher: IEEE

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The need for multiaccess protocols arises whenever a resource is shared by many independent contending users. Two major factors contribute to such a situation: the need to share expensive resources in order to achieve their efficient utilization, or the need to provide a high degree of connectivity for communication among independent subscribers (or both). In data transmission systems, the communication bandwidth is often the prime resource, and it is with respect to this resource that we view multiaccess protocols here. We give in this paper a unified presentation of the various multiaccess techniques which we group into five categories: 1) fixed assignment techniques, 2) random access techniques, 3) centrally controlled demand assignment techniques, 4) demand assignment techniques with distributed control, and 5) mixed strategies. We discuss their applicability to different enivironments, namely, satellite channels, local area communication networks and multihop store-and-forward broadcast networks, and their applicability to different types of data traffic, namely stream traffic and bursty traffic. We also present the performance of many of the multiaccess protocols in terms of bandwidth utilization and message delay.

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Page(s): 468 - 488

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