TCP MODELLING FOR CONGESTION CONTROL

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ABSTRACT

TCP is a transport protocol that guarantees reliable ordered delivery of data packets over wired networks. Although it is well tuned for wired networks, TCP performs poorly in mobile ad hoc networks. This is because TCP's implicit assumption that any packet loss is due to congestion is invalid in mobile ad hoc networks where wireless channel errors, link contention, mobility and multi-path routing may significantly corrupt or disorder packet delivery. If TCP misinterprets such losses as congestion and consequently invokes congestion control procedures, it will suffer from performance degradation and unfairness. To understand TCP behavior and improve the TCP performance over multi-hop ad hoc networks, considerable research has been carried out. As the research in this area is still active and many problems are still wide open, an in-depth and timely survey is well needed. Here, we first identify the challenges imposed on the standard TCP in wireless ad hoc network environment. Then we discuss some existing solutions according to their design philosophy. Finally, some suggestions on future research issues are presented.