TCP在無線區域網路效能改進方法之研究

吳忠融、林仁勇

E-mail: 9800615@mail.dyu.edu.tw

摘 要

改進傳統的TCP（Transmission Control Protocol）傳輸效能在 無線通信上是一個重要的研究領域。在無線與有線混合的網路裡，TCP傳輸效能下降的原因主要歸咎於它缺乏能力去區別封包遺失 的原因是由於網路壅塞所造成，或由無線鏈結錯誤所造成。而在 TCP眾多版本中，TCP Vegas藉由預測網路壅塞成功地防止週期性 封包遺失，它也被證實比目前網路使用的機制（TCP Reno）可以 達到更高的吞吐量。但是，TCP Vegas仍然無法正確區別網路壅塞 與位元錯誤所造成的封包遺失，而這種情況，在異質網路的環境 下，將會是嚴重影響TCP傳輸效能。 因此，本論文提出藉由每一 封包傳送的Queuing delay的增減趨勢來判斷封包遺失原因的演算 法，並將此演算法與TCP Vegas快速恢復（Fast Recovery）的演 算法整合，此一新版的TCP本論文稱為TCP Vegas-FRM。我們利用 NS2模擬在異質網路環境中的各種情況，觀察在重複ACK（Duplicate ACK）之前的數據來作為判斷的依據。由模擬結果 顯示，TCP Vegas-FRM成功區別壅塞與位元錯誤封包遺失的正確 率高達80%以上，而平均吞吐量（Throughput）也比TCP Vegas高。

關鍵詞 : TCP Vegas ; 快速恢復 ; 壅塞窗口 ; 重複ACK

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