

A QoS-Guaranteed Prefetching Protocol for Streaming VBR Videos to Resource-Limited Mobile Clients Over Wireless ATM Networks

Chang, Ing-Chau; Huang, Ming-Hung

Abstract

For supporting resource-limited mobile clients, such as the PDA, with the QoS-guaranteed real-time SMIL multimedia presentation over the wireless ATM network, we propose an adaptiveprefetching protocol for VBR-encoded streaming objects between the mobile client and the media server to minimize the size of extra buffer under fluctuated ATM ABR bandwidth and transmission delay. Simulation results exhibit excellent performances of this protocol for VBR video clips with different degrees of bit rate burstiness. Further, the scenario to reduce the protocol overhead, i.e., the number of transmitted control messages, is described. We also investigate the tradeoff between the size of extra buffer and the frequency of control messages.

Key words : QoS;Prefetching;VBR;Streaming;ATM

一個在無線非同步傳輸模式網路上確保資源有限的行動用戶變動位

元速率視訊服務品質的預載資訊流協定

Chang, Ing-Chau; Huang, Ming-Hung

摘要

為了能夠在無線非同步傳輸模式網路上提供資源有限的行動用戶，如個人數位助理，即時 SMIL 多媒體簡報展示獲得確保的服務品質，我們提出了一個支援行動用戶與媒體伺服器之間傳送變動位元速率編碼的資訊流物件所需的動態調整預載協定。即使無線非同步傳輸模式網路上可用位元速率方式所獲得的網路頻寬與傳輸延遲不斷的變動，透過這個協定仍然能夠使行用戶所需要的額外緩衝區的數量降到最低而仍然能持續播放即時 SMIL 多媒體簡報。在模擬實驗中，對於數種不同位元爆發程度的視訊片段都能達到非常好的傳輸效能。此外，更進一步提出減少此協定額外負擔的作法，以降低控制訊息的傳送。最後，我們也討論此協定所需的額外緩衝區的大小與傳送控制訊息的頻之間取得平衡的問題。

關鍵字：服務品質；預載；變動位元速率；資料流；非同步傳輸模式