Synchronized Mobile Multicast Support for Real-Time Multimedia Services

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Abstract

In this paper, we propose the Synchronized Mobile Multicast (SMM) scheme for the real-time multimedia service to achieve three most important characteristics that the traditional Home Subscription (HS) and Remote Subscription (RS) mobile schemes cannot support. First, the SMM scheme supports the scalable one-to-many and many-to-many synchronized multimedia multicast on mobile IP networks to achieves seamless playback of continuous media streams even when both the mobile sender and receivers handoff simultaneously. Second, it analyzes the minimal buffer requirements of the mobile sender, the core router, the foreign agents and the mobile receivers in the multicast tree and formulates the initial playback delay within a handoff Guarantee Region (GR). Further, combined with the fine granularity scalability (FGS) encoding approach in the MPEG-4 standard, the SMM scheme achieves superior multimedia QoS guarantees and unlimited numbers of handoffs of the mobile sender and receivers only at the cost of degraded video quality for a short period after handoff with minimal extra bandwidth.

Key words：QoS; Real-time multimedia; Seamless playback;

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