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Abstract
With the advancement of wireless network technologies and booming development of mobile communication systems, it has become feasible to present multimedia contents via mobile devices. However, it is more challenging and important to provide QoS guarantees for multimedia connections in wireless networks than in wired networks due to the limited bandwidth of wireless networks and the mobility of mobile devices. How to reduce the dropping probability of multimedia streaming in wireless networks and maintain QoS guarantee will be an issue of great significance and worth discussion. This paper proposes a novel Adaptive Bandwidth Management (ABM) architecture to ensure the QoS of Multimedia Multi-Class. The architecture is composed of Application Service and Bandwidth Management. The application service includes the service profile and priority of Multi-Class while the second part, bandwidth management comprises Resource Reservation, DRA (Dynamic Resource Adjustment), Rate Adaption and Resource Monitor. Provided a mobile host (MH) fails to reserve its required resources, it can borrow the resources reserved for other MHs through DRA algorithm and thus have sufficient resources to maintain the service quality of the media streaming. According to the load of cells, rate adaption mechanism can adjust the requested bandwidth of the multimedia connections properly. Moreover, through resource monitor, the bandwidth released by the completed connections can be allocated to handoff connections and new connections in queues. Based on the results of the experiment, compared with other approaches, this approach effectively reduces call dropping probabilities and call blocking probabilities while improving bandwidth utilization.
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