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An enhanced framework for providing multimedia broadcast/multicast service over heterogeneous networks

一种适用于在异构网络中提供多媒体广播/多播业务的增强型架构

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Key words: IEEE 802.21, MIBM-SC, MBMS, MIIS, Heterogeneous networks, Network resource management

关键词：IEEE 802.21，媒介独立广播多播服务中心，多媒体广播/多播服务，媒介独立信息服务，异构网络，网络资源管理

- In this paper, the proposed Media Independent Broadcast Multicast Service Center (MIBM-SC) improves the handover performance for broadcast/multicast service over hetero-geneous networks by extensions and enhancement of Multimedia Broadcast/Multicast Service (MBMS) and Media Independent Information Service (MIIS) architecture.

- A network selection algorithm and a cell transmission mode selection algorithm are proposed to select the best target network and best transmission mode. Both schemes are based on a load-aware network capacity estimation algorithm.

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Performance evaluation (I)

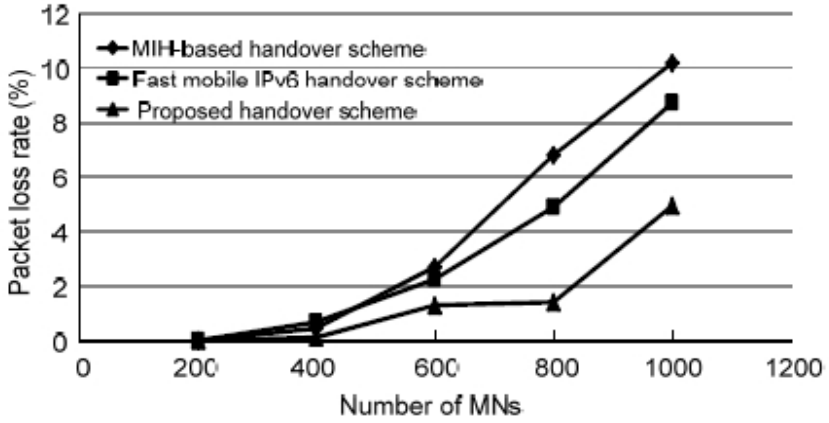


Fig. 10 Average packet loss rate of a mobile node (MN) versus the different numbers of MNs

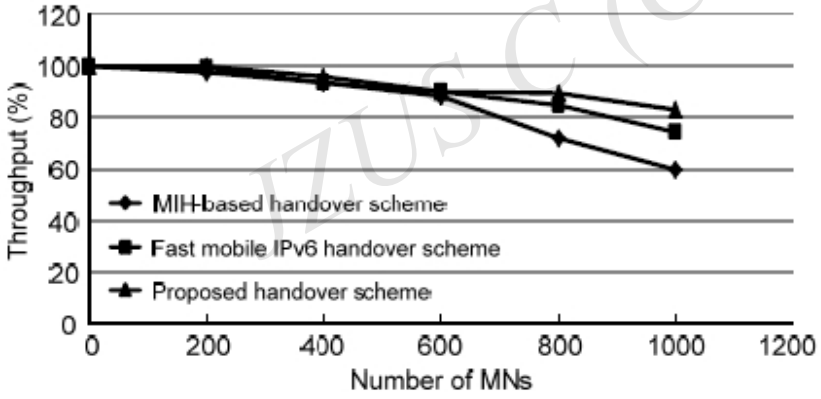


Fig. 11 Average throughput of a mobile node (MN) versus the different numbers of MNs

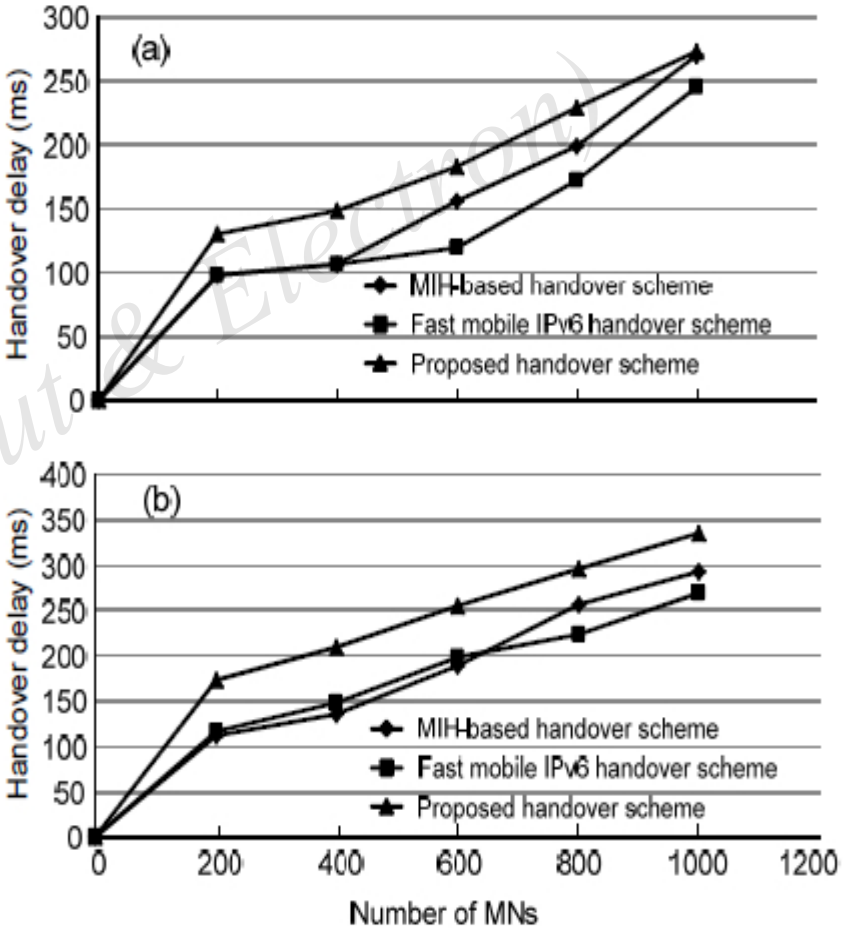


Fig. 12 Average handover delay of a mobile node (MN) versus the different numbers of MNs

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Performance evaluation (II)

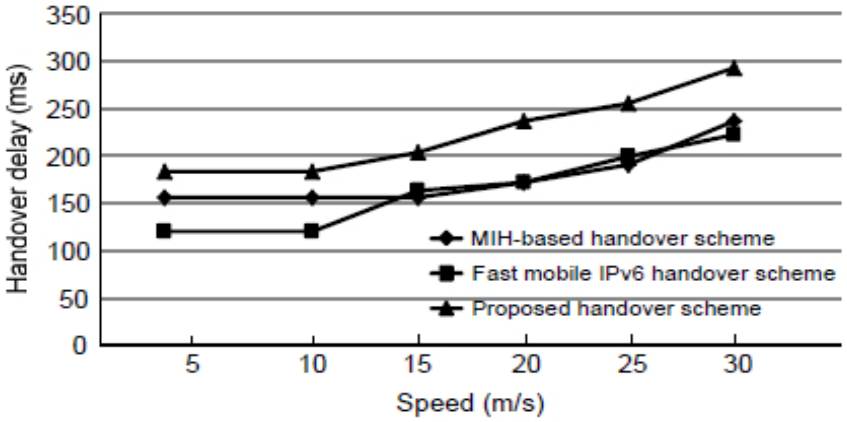


Fig. 13 Average handover delay of a mobile node (MN) versus the different speeds of movement

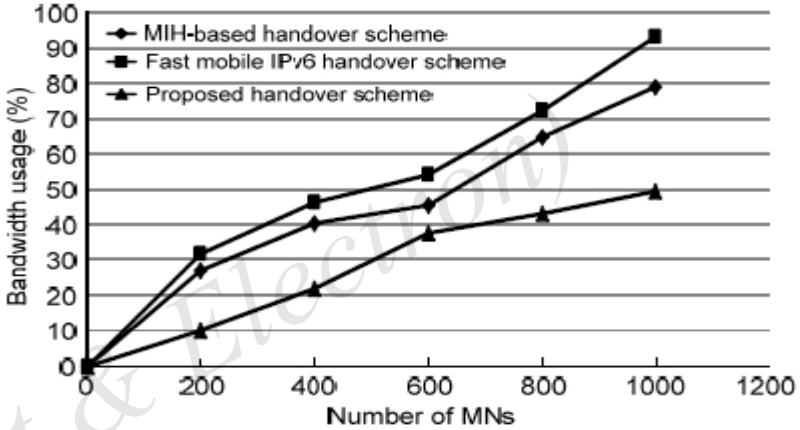


Fig. 15 Average bandwidth usage versus the different numbers of mobile nodes (MNs)

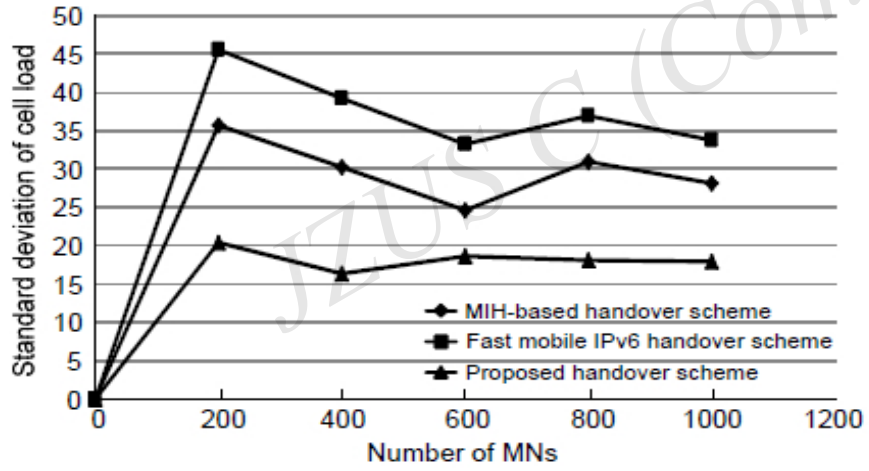


Fig. 14 Standard deviation of cell load versus the different numbers of mobile nodes (MNs)

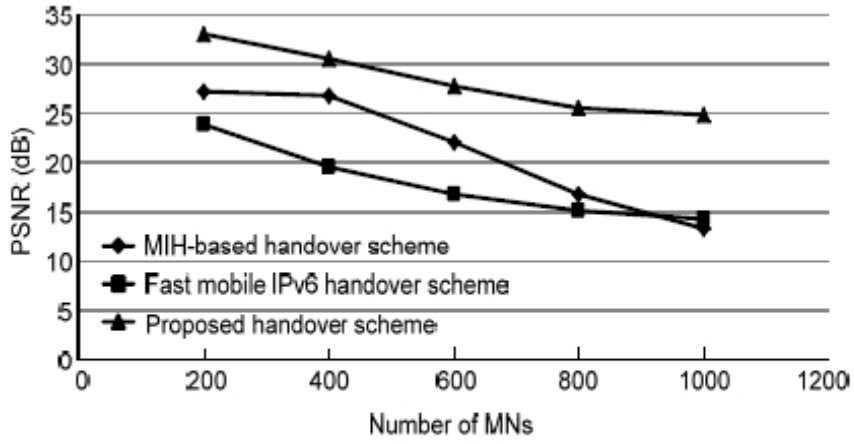


Fig. 16 Average PSNR for a certain mobile node (MN) versus the different numbers of MNs

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Conclusions

- MIBM-SC leverages on the advantages of MBMS and MIIS.

- Simulation results show that the proposed scheme improves users' mobility experience in the provision of MBMS in terms of packet loss rate, throughput, handover time, cell load, bandwidth usage, and peak signal-to-noise ratio (PSNR).

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