

Research on quality-of-service-aware routing techniques for video data transmission applications in mobile networks

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Abstract: This study investigates Quality of Service (QoS)-aware routing techniques for video data transmission in mobile networks. The increasing demand for high-quality real-time video streaming poses significant challenges due to network dynamics, bandwidth fluctuations, and strict latency requirements. This research proposes and evaluates a novel routing framework that integrates real-time network state monitoring with adaptive path selection algorithms. The proposed technique leverages multi-constraint optimization, considering parameters such as available bandwidth, end-to-end delay, jitter, and packet loss rate to ensure stable video quality. Simulation results demonstrate that the proposed approach significantly improves video transmission performance compared to conventional routing protocols, achieving higher throughput, reduced packet loss, and lower latency variation. The findings contribute to enhancing user experience for mobile video applications and provide a foundation for future adaptive routing solutions in heterogeneous mobile environments.

Keywords: QoS routing, video data transmission, mobile network, quality of service