

Evaluating the quality of multimedia data services in Ad hoc networks

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Abstract: This study evaluates the quality of multimedia data services in mobile ad hoc networks (MANETs), which face significant challenges due to dynamic topology, limited bandwidth, and node mobility. The research proposes a comprehensive assessment framework integrating key quality of service (QoS) parameters, including packet delivery ratio, end-to-end delay, jitter, and throughput, specifically tailored for real-time multimedia applications. Through extensive simulations under varying network conditions, the study analyzes the performance of different routing protocols in supporting video and audio streaming. The results indicate that while proactive protocols offer lower latency, reactive protocols demonstrate better adaptability to network changes. Furthermore, the findings highlight the critical impact of node density and mobility speed on service quality, with performance degradation becoming pronounced in high-mobility scenarios. The proposed framework provides a reliable metric for evaluating multimedia service quality, offering practical insights for optimizing protocol selection and network configuration in ad hoc environments. This research contributes to enhancing the user experience for multimedia applications in infrastructure-less networks.

Keywords: service quality, multimedia data, Ad hoc network, evaluation