

Partially Reliable Video Live Streaming Based on QUIC in Mobile Platform = Partially Reliable Video Live Streaming Berbasis QUIC pada Platform Mobile

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Abstrak

<i>Live streaming has become increasingly popular especially in mobile devices, driving the need for efficient and reliable communication protocols. QUIC protocol, which was introduced by Google, offers significant advantages compared to traditional Transmission Control Protocol (TCP) and User Datagram Protocol (UDP) based solutions. Previous research has demonstrated QUIC's potential, but the infrastructure was built to stream Video On Demand (VOD). This research aims to address these gaps by implementing a live streaming feature that uses QUIC stream and datagram. The work focuses on improving existing partially reliable mode, developing a hybrid fragmentation algorithm with threshold-based switching, as well as evaluating the application in mobile environment. Live stream support is achieved using Real-Time Messaging Protocol (RTMP), while mobile implementation is achieved using the system's WebView. Results indicate that live streaming with QUIC achieves competitive and promising latency compared to existing services. Hybrid mode shows better download speeds and reduced latency compared to QUIC stream. Although mobile performance slightly lags behind desktop implementations, the application is still stable in both wireless and mobile network environments. This research validates QUIC's potential in enhancing live streaming services on mobile platforms and provides insights for future development.</i>

.....Popularitas live streaming pada platform mobile mendorong perlunya protokol komunikasi yang efisien dan reliable. Protokol QUIC, yang diperkenalkan oleh Google, menawarkan keuntungan yang signifikan dibandingkan dengan Transmission Control Protocol (TCP) dan User Datagram Protocol (UDP) tradisional. Penelitian sebelumnya telah menunjukkan potensi QUIC, tetapi hanya untuk streaming Video On Demand (VOD). Penelitian ini bertujuan untuk mengatasi gap ini dengan mengimplementasikan fitur live streaming menggunakan QUIC stream dan datagram. Penelitian ini berfokus pada peningkatan algoritma fragmentasi mode partially reliable yang sudah ada pada mode hybrid dengan threshold-based switching, serta mengevaluasi aplikasi mobile. Fungsionalitas live streaming dicapai dengan menggunakan Real-Time Messaging Protocol (RTMP), sedangkan implementasi mobile dicapai dengan menggunakan WebView sistem. Hasil menunjukkan bahwa live streaming dengan QUIC memiliki latensi yang kompetitif dan menjanjikan dibandingkan dengan layanan yang ada. Mode hybrid menunjukkan kecepatan download yang lebih baik dengan latensi yang lebih rendah daripada QUIC stream. Meskipun performa mobile sedikit lebih lambat dibanding desktop, aplikasi masih stabil di lingkungan jaringan wireless dan mobile. Penelitian ini memvalidasi potensi QUIC dalam layanan live streaming di platform mobile dan memberikan wawasan untuk pengembangan selanjutnya.