

ABSTRACT

Website loading speed is crucial for maintaining service quality. Google reports that 53% of internet users tend to abandon websites that take more than 3 seconds to load. To address this challenge, HTTP/3—built on the QUIC protocol—emerges as an innovation designed to overcome the limitations of TCP, such as high latency and head-of-line blocking, by enabling faster connection establishment and independent multiplexing. However, the adoption of HTTP/3 remains limited due to its experimental implementation, necessitating a comprehensive performance evaluation. This study evaluates the performance of HTTP/3 compared to HTTP/2 on the OpenLiteSpeed web server using web performance metrics (FCP, LCP, SI) and throughput under various network conditions, including strong signal, weak signal, high latency, and packet loss. The test results consistently show that HTTP/3 outperforms HTTP/2 in all scenarios, particularly in networks experiencing high packet loss. These findings highlight the potential of HTTP/3 on OpenLiteSpeed to enhance website performance, especially under unstable network conditions.

Keywords: *HTTP/3, QUIC, OpenLiteSpeed, Throughput, Delay, Packet Loss.*