The Internet Protocol is constantly evolving due to the ever-increasing demand for global connectivity, but limitations in the commonly used IPv4 protocol are rapidly making it a hinderance (Ugwumba & Jaja, 2025).

IPv6 is intended to replace IPv4, as it has advantages such as exponentially more available addresses (≈4.3 billion vs. ≈340 undecillion), better security features, and improved routing efficiency (Amazon, 2025).

Dr. Raymond Lutui has requested an evaluation of the network performance of three Linux-based operating systems configured as software routers to determine which has the best performance across both IPv4 and IPv6, and to compare the data with his previous evaluations.