

ABSTRACT

***The development of satellite technology** requires the development of communication systems that require more efficient and reliable data transmission protocols. The problem of implementing networks using satellite intermediaries always encounters problems with the level of efficiency which is less than that of terrestrial networks at present, this is due to the problem of high latency.*

***This topic discusses inter-satellite communication systems, particularly TCP networks,** which are crucial for global systems such as navigation, military operations, and remote internet communications. For example, internet services like Starlink rely on the efficiency and stability of the TCP protocol. The limitations of TCP performance under terrestrial and satellite conditions, which lead to quality degradation, are reflected in the characteristics of each TCP protocol.*

***Simulation and analysis of TCP Linux & Tahoe on distance and buffer.** Conducting analysis by comparing the performance of TCP Linux and TCP Tahoe in various satellite network conditions such as variations in distance between nodes, bandwidth width and buffer size. Simulations were conducted using NS-2 (Network Simulator 2) with a single-orbit Iridium satellite model to simulate a realistic satellite environment. With the aim of identifying more efficient and stable protocols under certain conditions such as how each protocol responds to network limitations such as high latency and narrow buffers.*

***The results of testing 2 TCP on changes in the distance between nodes and buffers.** Testing on changes in the distance between nodes shows that both TCP's do not affect the quality of delivery, while TCP Linux dominates more discarded packets at the 100-200 bit level, Tahoe is more consistent at the <200 bit level, and the smaller average delay at each bandwidth enlargement. TCP Tahoe is more stable and highly efficient in narrow buffer conditions and wider bandwidth, this is evidenced by a higher ratio than Linux, while TCP Linux excels in high throughput but is more susceptible to interference with packet loss, high delay and narrow buffers*

Keywords: tcp tahoe, tcp linux, satellite network, network simulator 2