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Revolutionizing Connectivity: Advancing Equitable Traffic Access through Advanced Scalability and Load Balancing Network Architecture via Adaptive Equalization Algorithms

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Abstract: *The contemporary internet landscape grapples with reliability issues, primarily stemming from internet traffic challenges that lead to slowdowns. A significant contributor to this predicament is the multitude of devices and users connected to the internet, straining the available bandwidth. This research introduces a system designed to address this problem by implementing bandwidth balancing and limitations on individual users. To initiate this study, specific requirements, both hardware and software, need consideration. Given the study's involvement with networks, basic network adapters become essential.*

The bandwidth limiter, a key feature of the system, regulates the internet bandwidth accessible to users. Regardless of download/upload activities, the limiter ensures users stay within preset bandwidth limits. This proactive measure aids in preventing or minimizing average internet traffic issues within a network. The system's implementation results in a more balanced distribution of internet bandwidth among users connected to the same network, ultimately enhancing internet connectivity.

This research addresses contemporary internet challenges by introducing a system that employs adaptive algorithms for equitable traffic access. The proposed system, encompassing bandwidth balancing and limitations, aligns with the overarching goal of achieving advanced scalability and load balancing in network architecture. By proactively managing internet traffic through the use of a bandwidth limiter, the system aims to enhance the equitable distribution of internet bandwidth among connected users, contributing to a more efficient and reliable network infrastructure.

Keywords: Adaptive Equalization Algorithm, Traffic Sharing, Bandwidth grabbing, Load Balancing Network Architecture, Equitable Traffic Access

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