ABSTRACT

As the demand for secure and private internet connections continues to grow, implementing Virtual Private Network (VPN) solutions has become a primary focus for safeguarding user data and privacy. This project aims to implement and configure a VPN server using OpenVPN, hosted on Amazon Web Services (AWS) in the North Virginia region. This location was chosen based on considerations for optimizing access speed and connection stability for users across various global regions, particularly in North America and its surroundings.

The implementation process began with the selection of an appropriate EC2 instance from AWS, where the T2 Micro instance type was chosen due to its availability within the AWS Free Tier, allowing the VPN server to be used for free for up to 750 hours per month. The OpenVPN server configuration included software installation, setting up VPN user accounts, and adjusting internet traffic routing settings so that all user traffic is directed through the VPN server. Additionally, a custom DNS server configuration, such as Google or Cloudflare, was added to enhance responsiveness and access speed.

Performance testing indicated that the VPN server configured in the North Virginia region provided stable performance with low latency, even when used for intensive internet activities. By leveraging AWS's cloud-based solutions, this project demonstrates that a secure, efficient, and cost-effective VPN implementation can be accessible to individuals and small organizations without requiring significant investments in network infrastructure. The results of this project are expected to serve as a valuable reference for those looking to implement similar VPN solutions in the future.

Keywords*: AWS (Amazon Web Services), Virtual Private Network, Virtual Private Cloud (VPC)*