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**A Study of Cloud Computing with The Internet of Things to Mitigate  
Distributed Denial of Service Attacks (DDoS)**

**Moram Sunil Kumar Reddy**

Research Scholar, Ph. D. in Computer Science and Engineering  
Dr. A.P.J. Abdul Kalam University, Indore, M.P., India.

**ABSTRACT**

The integration of Cloud Computing and the Internet of Things (IoT) has revolutionized digital ecosystems, offering scalable solutions and real-time data processing. However, this convergence has also increased vulnerabilities, particularly to Distributed Denial of Service (DDoS) attacks, which can cripple networks and disrupt essential services. This paper explores how cloud-based solutions, combined with IoT security frameworks, can effectively mitigate DDoS threats. Cloud computing provides dynamic resource allocation, traffic monitoring, and anomaly detection, enabling rapid response mechanisms to counteract malicious traffic. IoT devices, often the target of botnet-driven DDoS attacks, require enhanced security measures such as artificial intelligence-driven threat detection, blockchain-based authentication, and edge computing for decentralized protection. By leveraging machine learning algorithms and real-time analytics, cloud platforms can filter malicious requests while ensuring legitimate traffic is not compromised. This research highlights best practices in securing IoT ecosystems through adaptive security frameworks, emphasizing encryption, network segmentation, and automated threat intelligence sharing. Additionally, it discusses future trends, such as software-defined networking (SDN) and zero-trust architectures, to strengthen cloud-IoT security. The findings underscore the need for a proactive and resilient security approach, ensuring the seamless operation of cloud-based IoT infrastructures while mitigating the evolving risks of DDoS attacks.