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Blockchain Application in Network Security

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Abstract: *The increasing dependence on computer networks for communication, data sharing, and online services has significantly raised concerns regarding network security. Modern networks are frequently targeted by various cyber threats, including unauthorized access, data breaches, identity spoofing, man-in-the-middle attacks, and distributed denial-of-service (DDoS) attacks. Traditional network security solutions such as centralized authentication servers, firewalls, and intrusion detection systems often face limitations related to single points of failure, lack of transparency, and trust dependency on third-party authorities. These challenges highlight the need for more robust, decentralized, and trustworthy security mechanisms.Blockchain technology has emerged as a promising solution to address these security challenges due to its decentralized, immutable, and transparent nature.*

This paper presents a comprehensive survey of blockchain applications in network security. It explores how blockchain technology can be effectively utilized to improve key security aspects such as secure authentication, access control, data integrity verification, secure communication, and resistance against common cyber-attacks. The study reviews existing research works in this domain and analyzes different blockchain-based security models proposed by researchers. A comparative analysis between traditional network security approaches and blockchain-based solutions is also provided to highlight the advantages and limitations of each.

Keywords: Blockchain, Network Protection, Cyber Security, Distributed Ladger, Secure Communication

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