

An Improved Quality of Service Design for Real-Time Services Over Future Generation Wireless Networks using Blockchain Technology

Dr. G. Nanthakumar¹, Alex S², Nandhini V³, and Mr. K. Pazhanivel⁴

Professor, Department of Computer Science and Engineering^{1,4}

Student, Department of Computer Science and Engineering^{2,3}

Anjalai Ammal Mahalingam Engineering College, Thiruvarur, Tamil Nadu, India

Abstract: *The sixth generation of wireless networks, or 6G, is expected to provide unprecedented levels of connectivity and communication capabilities. It is essential to make sure that the underlying infrastructure is dependable, secure, and trustworthy in order to meet the growing demand for high-speed and low-latency communication services. A flexible and scalable solution is also provided by the proposed infrastructure, which is essential to meet future demand for high-speed and low-latency communication services. Blockchain technology has been recognized as a possible option due to its capacity to offer security, accountability, and transparency. The proposed infrastructure is designed using permissioned distributed ledgers, which provide an efficient and secure solution to improve accountability, transparency, and security in the delivery of wireless services. The proposed method makes use of the benefits of permissioned distributed ledger technology and blockchain technology to provide a dependable and trustworthy infrastructure for 6G wireless networks. The proposed solution is modular and easily extendable, allowing for the integration of new services and applications as they become available.*

Keywords: Blockchain

REFERENCES

- [1]. Shoichi ANDO, Yuichi HAYASHI, Takaaki MIZUKI / Hideaki SONE. "Basic Study on the Method for Real-Time Video Streaming with Low Latency and High Bandwidth Efficiency", 24 September 2015.
- [2]. M. Dohler and D. Simeonidou. (2021). From 5G To 6G Governance. [Online]. Available: <https://bit.ly/3AWebvR>.
- [3]. Alkhansaa Abuhashim, Chiu C. Tan. "Smart Contract Designs on Blockchain Applications", October 29, 2020.
- [4]. Muhammad Jalal Khan, Saad Harous, and Abdelhak Bentaleb. "Client-driven Adaptive Bitrate Techniques for Media Streaming over HTTP: Initial Findings", November 02, 2020.
- [5]. E. Androulaki et al., "Hyperledger fabric: A distributed operating system for permissioned blockchains", Proc. 13th EuroSyst. Conf., pp. 30, 2018.
- [6]. S. Asefi, Y. Madhwal, Y. Yanovich, and E. Gryazina. "Application of blockchain for secure data transmission in distributed state estimation", 23 June 2021.
- [7]. MUNTADHER ALSABAH 1, MARWAH ABDULRAZZAQ NASER 2, "6G Wireless Communications Networks A Comprehensive Survey", November 2, 2021.
- [8]. Won J. Jeon and Klara Nahrstedt. "PEER-TO-PEER REAL TIME STREAMING AND CACHING SERVICE", 07 November 2002.
- [9]. Chonggang Wang (Lead), Mischa Dohler, Diego R. López, Raymond Forbes, Shahar Steiff, Tooba Faisal, Sheeba Backia Mary B., Qianren Liu, Ismael Arribas. "An Introduction of Permissioned Distributed Ledger (PDL)", 1st edition – January 2022.

- [10]. T. Maksymyuk, J. Gazda, M. Volosin, G. Bugar, D. Horvath, M. Klymash, and M. Dohler, “Blockchain-empowered framework for decentralized network management in 6G,” *IEEE Commun. Mag.*, vol. 58, no. 9, pp. 86–92, Sep. 2020.
- [11]. S. Brakeville and B. Perepa. (2018). *Blockchain Basics: Introduction to Distributed Ledgers*. [Online]. Available: <https://ibm.co/3m3LWW8>.
- [12]. M. Zachariadis, G. Hileman, and S. V. Scott, “Governance and control in distributed ledgers: Understanding the challenges facing blockchain technology in financial services,” *Inf. Org.*, vol. 29, no. 2, pp. 105–117, Jun. 2019.
- [13]. Tooba Faisal, Mischa Dohler, (Fellow, IEEE), Simone Mangiante, And Diego R. Lopez,. “BEAT: Blockchain-Enabled Accountable and Transparent Infrastructure Sharing in 6G and Beyond”.
- [14]. Ramona Trestian, Ioan-Sorin Comsa, Mehmet Fatih Tuysuz, “Seamless Multimedia Delivery Within a Heterogeneous Wireless Networks Environment: Are We There Yet?” pp. 4-7.
- [15]. *Communications in the 6G Era*. (n.d.). *Communications in the 6G Era | IEEE Journals & Magazine | IEEE Xplore*.
- [16]. <https://ieeexplore.ieee.org/document/9040431>.