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Adoption of Blockchain in IoT: Challenges and Solutions

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Abstract: *Data is streamed from sensors, through fog devices, and onto a centralized Cloud server in traditional Internet of Things (IoT) ecosystems. Issues that arise include privacy concerns due to third-party management of Cloud servers, single points of failure, a bottleneck in data flows, and difficulties in regularly updating firmware for millions of smart devices from a point of security and maintenance perspective. Blockchain, the underlying technology of Bitcoin, was initially primarily intended for the transfer of monetary value. Nevertheless, researchers and security analysts from all over the world are focusing on the blockchain to address the security and privacy issues of IoT due to its decentralized architecture, fault tolerance, and cryptographic security benefits like pseudonymous identities, data integrity, and authentication. Blockchain technology protects users by avoiding reliable third parties. This has inspired researchers to investigate blockchain's adoption into the IoT ecosystem. In this paper, let us understand more about blockchain, its application in IoT, challenges while handling IoT data on the blockchain, and its security solutions.*

Keywords: Internet of Things.

REFERENCES

[1]. A.M. Antonopoulos, Mastering Bitcoin: Unlocking Digital Crypto-Currencies, first ed., O'Reilly Media, Inc., 2014.
[2]. The-Bitcoin-Foundation, How does Bitcoin work?, 2014.
[3]. BitInfoCharts, Block - Bitcoin Wiki, 2016.
[4]. EtherScan, Ethereum Average BlockTime Chart, 2016. URL https://etherscan. io/chart/blocktime.
[5]. H.G.C. Ferreira, R.T. de Sousa, F.E.G. de Deus, E.D. Canedo, Proposal of a secure, deployable and transparent middleware for Internet of Things, in: 2014 9th Iberian Conference on Information Systems and Technologies, CISTI, 2014, pp. 1–4. http://dx.doi.org/10.1109/CISTI.2014.6877069.
[6]. Linux-Foundation, Blockchain technologies for business, 2017.
[7]. C. Kuhlman, What is eris? 2016 Edition, 2016.
[8]. Stellar, Stellar network overview, 2014. URL https://www.stellar.org/develo pers/guides/get-started/..
[9]. Ripple, Ripple network, 2013.
[10]. All-In-Bits, Introduction to tendermint, 2017. URL https://tendermint.com/ intro.
[11]. J. Mattila, The blockchain phenomenon: The disruptive potential of distributed consensu architectures, ETLA working papers: Elinkeinoelämän Tutkimuslaitos, Research Institute of the Finnish Economy, 2016 URL https: //books.google.com.pk/books?id=StNQnQAACAAJ.
[12]. EconoTimes, Safeshare releases first blockchain insurance solution for sharing economy, 2016. URL https://www.econotimes.com/SafeShare-ReleasesFirst-Blockchain-Insurance-Solution-For-Sharing-Economy-181326.
[13]. IBM, IBM blockchain based on hyperledger fabric from the linux foundation, 2017. URL
[14]. I. Friese, J. Heuer, N. Kong, Challenges from the Identities of Things: Introduction of the Identities of Things discussion group within Kantara initiative, in: 2014 IEEE World Forum on Internet of Things (WF-IoT), 2014, pp. 1–4
[15]. P. Otte, M. de Vos, J. Pouwelse, TrustChain: A Sybil-resistant scalable blockchain, Future Gener. Comput. Syst. (2017). http://dx.doi.org/10.1016/ j.future.2017.08.048.

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[16]. M. Conoscenti, A. Vetro, J.C.D. Martin, Blockchain for the Internet of Things: A systematic literature Review, in: The 3rd International Symposium on Internet of Things: Systems, Management, and Security, IOTSMS-2016, 2016.

[17]. G. Zyskind, O. Nathan, A. Pentland, Enigma: decentralized computation platform with guaranteed privacy, 2015. URL http://enigma.media.mit.edu/ enigma~full.pdf.

[18]. Y. Zhang, J. Wen, An IoT electric business model based on the protocol of bitcoin, in: 2015 18th International Conference on Intelligence in Next Generation Networks, 2015, pp. 184–191.

[19]. D. Wörner, T. von Bomhard, When your sensor earns money: Exchanging data for cash with bitcoin, in: Proceedings of the 2014 ACM International Joint Conference on Pervasive and Ubiquitous Computing: Adjunct Publication, UbiComp '14 Adjunct, ACM, New York, NY, USA, 2014, pp. 295–298.

[20]. L. Axon, Privacy-awareness in Blockchain-based PKI, Tech. Rep. 2015.

[21]. C. Fromknecht, D. Velicanu, S. Yakoubov, CertCoin: A namecoin based decentralized authentication system, 2014. URL https://courses.csail.mit.edu/ 6.857/2014/files/19-fromknecht-velicann-yakoubov-certcoin.pdf.

[22]. A. Bahga, V.K. Madisetti, Blockchain platform for industrial Internet of Things, Tech. Rep. 2016. URL

[23]. K. Christidis, M. Devetsikiotis, Blockchains and smart contracts for the Internet of Things, IEEE Access 4 (2016) 2292–2303. http://dx.doi.org/10.1109/ ACCESS.2016.2566339.

[24]. V. Pureswaran, P. Brody, Device Democracy - Saving the future of the Internet of Things, IBM,2014.

[25]. P. Kamalinejad, C. Mahapatra, Z. Sheng, S. Mirabbasi, V.C.M. Leung, Y.L. Guan, Wireless energy harvesting for the Internet of Things, IEEE Commun. Mag. 53 (6) (2015) 102–108.