Comparing caching approaches with Software-defined Networking (SDN) for Internet of Things (IoT) applications

Florian Weidner
Philipps-University Marburg, Germany
Department of Mathematics and Computer Science, Distributed Systems Group
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I. PRELIMINARY STRUCTURE

- 1) Abstract
- 2) Introduction
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- Comparing caching aproaches with SDN for IoT applications
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Abstract—The abstract goes here.

II. INTRODUCTION

Software-defined Networking is an approach to network management that uses abstraction to... [8] [4] [1]

A. Applications of SDN

SDN is commonly used in data centers, cloud environments, and enterprise networks to... [9] [1]

III. SDN IN IOT

A big section where SDN is used is IoT. There are a lot of possibilities... [7] [11] [12]

A. Caching in IoT with SDN

[6] [5] [3] [2] [10]

IV. CONCLUSION

SDN is great. It brings a lot of advantages...

REFERENCES

- [1] Mudassar Hussain et al. "Software-defined networking: Categories, analysis, and future directions". en. In: *Sensors (Basel)* 22.15 (2022), p. 5551.
- [2] Seyedeh Shabnam Jazaeri et al. "An efficient edge caching approach for SDN-based IoT environments utilizing the moth flame clustering algorithm". In: *Cluster Computing* 27.2 (May 2023), 1503–1525. ISSN: 1386-7857. DOI: 10.1007/s10586-023-04023-9. URL: https://doi.org/10.1007/s10586-023-04023-9.
- [3] Seyedeh Shabnam Jazaeri et al. "Composition of caching and classification in edge computing based on quality optimization for SDN-based IoT health-care solutions". en. In: *J. Supercomput.* 79.15 (2023), pp. 17619–17669.

- [4] Abigail Jefia, S Popoola, and Atayero. "Software-defined networking: Current trends, challenges, and future directions". en. In: Popoola, S. (2018, September). Software-Defined Networking: Current Trends, Challenges3rd North American International Conference on Industrial Engineering and Operations Management (2018).
- [5] Naga Katta et al. "CacheFlow: Dependency-aware rulecaching for software-defined networks". In: *Proceed*ings of the Symposium on SDN Research. New York, NY, USA: ACM, 2016.
- [6] Ángel Leonardo Valdivieso Caraguay et al. "SDN: Evolution and Opportunities in the Development IoT Applications". In: *International Journal of Distributed Sensor Networks* 10.5 (2014), p. 735142. DOI: 10.1155/2014/735142. eprint: https://doi.org/10.1155/2014/735142. URL: https://doi.org/10.1155/2014/735142.
- [7] Yuhong Li et al. "Enhancing the Internet of Things with knowledge-driven Software-defined Networking technology: Future perspectives". en. In: *Sensors (Basel)* 20.12 (2020), p. 3459.
- [8] Rahim Masoudi and Ali Ghaffari. "Software defined networks: A survey". In: *Journal of Network and Computer Applications* 67 (2016), pp. 1–25. ISSN: 1084-8045. DOI: https://doi.org/10.1016/j.jnca.2016.03.016. URL: https://www.sciencedirect.com/science/article/pii/ S1084804516300297.
- [9] Alexander Nunez et al. A Brief Overview of Software-Defined Networking. 2023. arXiv: 2302.00165 [cs.NI]. URL: https://arxiv.org/abs/2302.00165.
- [10] Giuseppe Ruggeri et al. "Caching popular transient IoT contents in an SDN-based edge infrastructure". In: *IEEE Trans. Netw. Serv. Manag.* 18.3 (2021), pp. 3432–3447.
- [11] Ali Haider Shamsan and Arman Rasool Faridi. "SDN-Assisted IoT Architecture: A Review". In: 2018 4th International Conference on Computing Communication and Automation (ICCCA). 2018, pp. 1–7. DOI: 10.1109/CCAA.2018.8777339.
- [12] Sahrish Khan Tayyaba et al. "Software Defined Network (SDN) Based Internet of Things (IoT): A Road Ahead". In: *Proceedings of the International Conference on*

Future Networks and Distributed Systems. ICFNDS '17. Cambridge, United Kingdom: Association for Computing Machinery, 2017. ISBN: 9781450348447. DOI: 10. 1145/3102304.3102319. URL: https://doi.org/10.1145/3102304.3102319.