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Abstract

The intersection of mobile applications and computing with the promising concept of cloud computing resulted in the birth of Mobile Cloud Computing (MCC). MCC has emerged as a remarkable milestone for global mobile services. Enriching its efficiency and productivity to many dimensions, MCC serves a unique blend of mobile computing and cloud computing seamlessly integrated and tries to overcome issues related to environment (e. g. ,

heterogeneity, availability), security(e. g. , reliability and privacy) and performance issues(e. g. , bandwidth, storage capacity, battery life). This paper provides an introduction of MCC discussing its architecture and advantages; it then takes a look at various existing application models to MCC. The issues, challenges are discussed. In addition, Future research directions of MCC are also studied.

Refer

ences

- M. Satyanarayanan, Fundamental challenges in mobile computing, in: Proceedings of the Fifteenth Annual ACM Symposium on Principles of Distributed Computing, PODC'96, ACM, New York, NY, USA, 1996, pp. 1–7.
- L. Siegele, Let it rise: a special report on corporate it, <http://www.economist.com/node/12411882>, 2008.
- URL: <http://www.mobilecloudcomputingforum.com/>.
- M. Satyanarayanan, "Mobile computing: the next decade," ACM SIG-MOBILE Mobile Computing and Communications Review, vol. 15, no. 2, pp. 2–10, 2011.
- T. Imielinski and H. Korth, Introduction to Mobile Computing, ser. The Springer International Series in Engineering and Computer Science, 1996, vol. 353, pp. 1–43.
- H. Dinh, C. Lee, D. Niyato, and P. Wang, "A survey of mobile cloud computing: architecture, applications, and approaches," Wireless Communications and Mobile Computing, 2011.
- M. Satyanarayanan, "Pervasive computing: vision and challenges," IEEE Pers. Commun. , vol. 8, no. 4, pp. 10–17, 2001.
- E. Cuervo, A. Balasubramanian, D. Cho, A. Wolman, S. Saroiu, R. Chandra, and P. Bahl, "MAUI: making smartphones last longer with code offload," in Proc. ACM 8th Annual International Conference on Mobile Systems, Applications and Services (MobiSys'10), San Francisco, CA, USA, Jun. 2010, pp. 49–62.
- X. W. Zhang, A. Kunjithapatham, S. Jeong, and S. Gibbs, "Towards an elastic application model for augmenting the computing capabilities of mobile devices with cloud computing," Mobile Networks & Applications, vol. 16, no. 3, pp. 270–284, 2011.
- B.-G. Chun and P. Maniatis, "Augmented smartphone applications through clone cloud execution," in Proc. 12th Conference on Hot Topics in Operating Systems (HotOS'09), 2009, p. 8.
- R. Kemp, N. Palmer, T. Kielmann, and H. Bal, "Cuckoo: a computation offloading framework for smartphones," in Proc. 2nd International Conference on Mobile Computing, Applications, and Services, (Mo- biCASE '10), Santa Clara, CA, USA, Oct. 2010.
- Kakerow R. Low power design methodologies for mobile communication, In Proceedings of IEEE International Conference on Computer Design: VLSI in Computers and Processors, 2003; 8. 36(1): 21.
- Rudenko A, Reiher P, Popek GJ, Kuenning GH. Saving portable computer battery power through remote process execution. Journal of ACM SIGMOBILE on Mobile Computing and Communications Review 1998; 2(1).
- Mailagic A, Ettus M. System design and power optimisation for mobile computers, In

Proceedings of IEEE Computer Society Annual Symposium on VLSI, 2002; 10.

- Kremer U, Hicks J, Rehg J. A compilation framework for power and energy management on mobile computers, In Proceedings of the 14th International Conference on Languages and Compilers for Parallel Computing, 2001; 115–131.

- Cuervo E, Balasubramanian A, Dae-ki C, et al. MAUI: making smartphones last longer with code offload, In Proceedings of the 8th International Conference on Mobile systems, applications, and services, 2010; 49–62.

- Zou P, Wang C, Liu Z, Bao D. Phosphor: a cloud based drm scheme with SIM card, In Proceedings of the 12th International Asia-Pacific on Web Conference (APWEB), 2010; 459.

- URL: <https://www.google.co.in/drive>.

- URL: <https://www.icloud.com/>

- URL: <https://support.apple.com/en-in/HT204681>

- URL: <https://support.apple.com/en-in/HT204085>

- URL: <https://instagram.com/>

- URL: <http://www.flickr.com/>.

- URL: <http://www.shozu.com/portal/index.do>.

- URL: <http://www.facebook.com/>.

- Giurgiu, O. Riva, D. Juric, I. Krivulev, and G. Alonso, "Calling the Cloud: Enabling Mobile Phones as Interfaces to Cloud Applications," in Proceedings of the 10th ACM/IFIP/USENIX International Conference on Middleware (Middleware '09). Urbana Champaign, IL, USA: Springer, Nov. 2009, pp. 1–20.

- J. Rellermeyer, O. Riva, and G. Alonso, "AlfredO: An Architecture for Flexible Interaction with Electronic Devices," in Proceedings of the 9th ACM/IFIP/USENIX International Conference on Middleware (Middleware 2008), ser. Lecture Notes in Computer Science, vol. 5346. Leuven, Belgium: Springer, 2008, pp. 22–41.

- Mobile Cloud Computing: A Comparison of Application Models Dejan Kovachev, Yiwei Cao and Ralf Klamma Information Systems & Database Technologies RWTH Aachen University Ahornstr. 55, 52056 Aachen Germany.

- X. Zhang, S. Jeong, A. Kunjithapatham, and Simon Gibbs, "Towards an Elastic Application Model for Augmenting Computing Capabilities of Mobile Platforms," in The Third International ICST Conference on MOBILE Wireless MiddleWARE, Operating Systems, and Applications, Chicago, IL, USA, 2010.

- X. Zhang, J. Schiffman, S. Gibbs, A. Kunjithapatham, and S. Jeong, "Securing Elastic Applications on Mobile Devices for Cloud Computing," in CCSW '09: Proceedings of the 2009 ACM Workshop on Cloud Computing Security. Chicago, IL, USA: ACM, Nov. 2009, pp. 127–134.

- "An Approach to Ad hoc Cloud Computing" by Graham Kirby, Alan Dearle, Angus Macdonald et. al School of Computer Science University of St Andrews, St Andrews, Fife, Scotland KY16 9SX.

- G. Huerta-Canepa and D. Lee, "A Virtual Cloud Computing Provider for Mobile Devices," in Proceedings of the 1st ACM Workshop on Mobile Cloud Computing & Services Social Networks and Beyond (MCS '10). San Francisco, CA, USA: ACM, 2010, pp. 1–5.

- E. E. Marinelli, Hyrax: cloud computing on mobile devices using MapReduce, Masters Thesis, Carnegie Mellon University, 2009.

- URL: <http://hadoop.apache.org>

- J. Dean, S. Ghemawat, MapReduce: simplified data processing on large clusters, *Communications of the ACM* 51 (2008) 107–113.
- M. Satyanarayanan, P. Bahl, R. Ca ?ceres, and N. Davies, "The Case for VM-Based Cloudlets in Mobile Computing," *IEEE Pervasive Computing*, vol. 8, no. 4, pp. 14–23, Oct. 2009.
- M. Satyanarayanan, M. A. Kozuch, C. J. Helfrich, and D. R. O. Hallaron, "Towards Seamless Mobility on Pervasive Hardware," *Pervasive and Mobile Computing*, vol. 1, no. 2, pp. 157–189, Jul. 2005.
- A ? hlund, K. Mitra, D. Johansson, C. A ? hlund, and A. Zaslavsky, "Context-aware Application Mobility Support in Pervasive Computing Environments," in *Proceedings of the 6th International Conference on Mobile Technology, Application & Systems (Mobility & apos;09)*. Nice, France: ACM, Sep. 2009, pp. 1–4.
- T. Koponen, A. Gurtov, and P. Nikander, "Application Mobility with Host Identity Protocol," in *Identifier/Locator Split and DHTs: Proceedings of the Research Seminar on Telecommunications Software*. Helsinki: Helsinki University of Technology, 2004, p. 50.
- M. Kristensen, Scavenger: transparent development of efficient cyber foraging applications, in: *Proceedings of the IEEE International Conference on Pervasive Computing and Communications, PerCom*.
- Mobile cloud computing: A survey Niroshinie Fernando , Seng W. Loke , Wenny Rahayu Department of Computer Science and Computer Engineering, La Trobe University, Australia . *Future Generation Computer Systems* 29 (2013) 84–106 . 2012 Elsevier B. V
- D. S. Miloji?ic ?, F. Douglis, Y. Paindaveine, R. Wheeler, and S. Zhou, "Process Migration," *ACM Computing Surveys (CSUR)*, vol. 32, no. 3, pp. 241–299, Sep. 2000.
- Zhang L, Ding X, Wan Z, Gu M, Li XY. WiFace: a secure geosocial networking system using WiFi- based multi-hop MANET, In *Proceedings of the 1st ACM Workshop on Mobile Cloud Computing & Services: Social Networks and Beyond (MSC)*, 2010.
- Jin X, Kwok YK. Cloud assisted P2P media stream- ing for bandwidth constrained mobile subscribers, In *Proceedings of the 16th IEEE International Confer- ence on Parallel and Distributed Systems (ICPADS)*, 2011; 800.
- Expert Group Report, "The Future of Cloud Computing. Opportunities for European Cloud Computing Beyond 2010," 2010. [Online]. Available: <http://cordis.europa.eu/fp7/ict/ssai/docs/cloud-report-final.pdf>
- URL: <http://mobilecloudfamily.com/saeid>
- URL: <http://www.cse.tkk.fi/fi/opinnot/T-110.5121/2012/luennotfiles/T110.5121%20Mobile%20Offloading%2017102012%20MK.pdf>

Computer Science

Index Terms

Distributed Systems

Keywords

Cloud Computing Mobile Cloud Mobile Services And Applications.