

# Literature

- [1] W.M.P. van der Aalst, A.H. ter Hofstede, B. Kiepuszewski, A.P. Barros, Workflow patterns, Technical Report, Eindhoven University of Technology, 2000.
- [2] D. Abadi, Consistency tradeoffs in modern distributed database system design, Computer 45 (2) (2012) 37–42.
- [3] D. Abadi, et al., The Beckman report on database research, Communications of the ACM 59 (2) (2016) 92–99.
- [4] T.F. Abdelzaher, K.G. Shin, N. Bhatti, Performance guarantees for web server end-system: a control theoretic approach, IEEE Transactions on Parallel and Distributed Systems 13 (1) (2002) 80–96.
- [5] A. Abouzeid, K. Bajda-Pawlikowski, D.J. Abadi, A. Rasin, A. Silberschatz, HadoopDB: an architectural hybrid of MapReduce and DBMS technologies for analytical workloads, Proceedings of the VLDB Endowment 2 (1) (2009) 922–933.
- [6] B. Abrahao, V. Almeida, J. Almeida, A. Zhang, D. Beyer, F. Safai, Self-adaptive SLA-driven capacity management for Internet services, in: Proc. IEEE/IFIP Network Operations and Management Symp., 2006, pp. 557–568.
- [7] M. Abuelela, S. Olariu, Taking VANET to the clouds, in: Proc. 8-th ACM Int. Conf. on Advanced in Mobile Computing (MoMM’2010), Dec. 2010.
- [8] H. Abu-Libdeh, L. Princehouse, H. Weatherspoon, RACS: a case for cloud storage diversity, in: Proc. ACM Symp. Cloud Computing, CD Proc., ISBN 978-1-4503-0036-0, 2010.
- [9] D. Abts, The Cray XT4 and Seastar 3-D torus interconnect, in: D. Padua (Ed.), Encyclopedia of Parallel Computing, Part 3, Springer-Verlag, Heidelberg, 2011, pp. 470–477.
- [10] D. Abts, M.R. Marty, P.M. Wells, P. Klausler, H. Liu, Energy proportional datacenter networks, in: Proc. ACM IEEE Int. Symp. Comp. Arch., 2010, pp. 338–347.
- [11] B. Addis, D. Ardagna, B. Panicucci, L. Zhang, Autonomic management of cloud service centers with availability guarantees, in: Proc. IEEE 3rd Int. Conf. Cloud Computing, 2010, pp. 220–227.
- [12] S. Agarwal, H. Milner, A. Kleiner, A. Talwarkar, M. Jordan, S. Madden, B. Mozafari, I. Stoica, Knowing when you’re wrong: building fast and reliable approximate query processing systems, in: Proc. ACM SIGMOD Int. Conf. on Management of Data, ACM Press, 2014, pp. 481–492.
- [13] M. Ahmadian, F. Plohan, Z. Roessler, D.C. Marinescu, SecureNoSQL: an approach for secure search of encrypted NoSQL databases in the public cloud, International Journal of Information Management 37 (2017) 63–74.
- [14] F. Ahmad, M. Kazim, A. Adnane, A. Awad, Vehicular cloud networks: architecture, applications and security, in: Proc. 8-th IEEE/ACM Int. Conf. on Utility and Cloud Computing, UUC’2015, 2015, pp. 571–576.
- [15] T. Akidau, A. Balikov, K. Bekiröglu, S. Chernyak, J. Haberman, R. Lax, S. McVeety, D. Mills, P. Nordstrom, S. Whittle, MillWheel: fault-tolerant stream processing at Internet scale, Proceedings of the VLDB Endowment 6 (11) (2013) 1033–1044.
- [16] T. Akidau, R. Bradshaw, C. Chambers, S. Chernyak, R.J. Fernandez-Moctezuma, R. Lax, S. McVeety, D. Mills, F. Perry, E. Schmidt, S. Whittle, The data-flow model: a practical approach to balancing correctness, latency, and cost in massive-scale, unbounded, out-of-order data processing, Proceedings of the VLDB Endowment 8 (12) (2015) 1792–1803.
- [17] R. Albert, H. Jeong, A.-L. Barabási, The diameter of the world wide web, Nature 401 (1999) 130–131.
- [18] R. Albert, H. Jeong, A.-L. Barabási, Error and attack tolerance of complex networks, Nature 406 (2000) 378–382.

- [19] R. Albert, A-L. Barabási, Statistical mechanics of complex networks, *Reviews of Modern Physics* 72 (1) (2002) 48–97.
- [20] M. Al-Fares, A. Loukissas, A. Vahdat, A scalable, commodity data center network architecture, in: Proc. ACM SIGCOM Conf. on Data Communication, 2008, pp. 63–74.
- [21] G.M. Amdahl, Validity of the single-processor approach to achieving large-scale computing capabilities, in: Proc. Conf. American Federation of Inf. Proc. Soc. Conf., AFIPS Press, 1967, pp. 483–485.
- [22] Y. Amir, B. Awerbuch, A. Barak, R.S. Borgstrom, A. Keren, An opportunity cost approach for job assignment in a scalable computing cluster, *IEEE Transactions on Parallel and Distributed Systems* 11 (7) (2000) 760–768.
- [23] G. Ananthanarayanan, A. Ghodsi, S. Shenker, I. Stoica, Disk-locality in datacenter computing considered irrelevant, in: Procs. 13th USENIX Conf. on Hot Topics in Operating Systems, 2011, pp. 12–17.
- [24] R. Ananthanarayanan, V. Basker, S. Das, A. Gupta, H. Jiang, T. Qiu, A. Reznichenko, D. Ryabkov, M. Singh, S. Venkataraman, Photon: fault-tolerant and scalable joining of continuous data streams, in: Proc. ACM SIGMOD Int. Conf. on Management of Data, 2013, pp. 577–588.
- [25] T. Andrei, Cloud computing challenges and related security issues, <http://www1.cse.wustl.edu/jain/cse571-09/ftp/cloud/index.html>. (Accessed August 2015).
- [26] D.P. Anderson, BOINC: a system for public-resource computing and storage, in: Proc. 5th IEEE/ACM Int. Workshop Grid Computing, 2004, pp. 4–10.
- [27] R. Aoun, E.A. Doumith, M. Gagnaire, Resource provisioning for enriched services in cloud environment, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 296–303.
- [28] Apache, Apache capacity scheduler, [https://svn.apache.org/repos/asf/hadoop/common/tags/release-0.19.1/docs/capacity\\_scheduler.pdf](https://svn.apache.org/repos/asf/hadoop/common/tags/release-0.19.1/docs/capacity_scheduler.pdf). (Accessed August 2016).
- [29] D. Ardagna, M. Trubian, L. Zhang, SLA based resource allocation policies in autonomic environments, *Journal of Parallel and Distributed Computing* 67 (3) (2007) 259–270.
- [30] D. Ardagna, B. Panicucci, M. Trubian, L. Zhang, Energy-aware autonomic resource allocation in multi-tier virtualized environments, *IEEE Transactions on Services Computing* 5 (1) (2012) 2–19.
- [31] S. Arif, S. Olariu, J. Wang, G. Yan, W. Yang, I. Khalil, Datacenter at the airport: reasoning about time-dependent parking lot occupancy, *IEEE Transactions on Parallel and Distributed Systems* 23 (11) (2012) 2067–2080.
- [32] M. Armbrust, A. Fox, R. Griffith, A.D. Joseph, R. Katz, A. Konwinski, G. Lee, D. Paterson, A. Rabkin, I. Stoica, M. Zaharia, Above the clouds: a Berkeley view of cloud computing, Technical Report UCB/EECS-2009-28, 2009.
- [33] D. Artz, Y. Gil, A survey of trust in computer science and the Semantic Web, *Journal of Web Semantics. Science, Services, and Agents on World Wide Web* 1 (2) (2007) 58–71.
- [34] M.J. Atallah, C. Lock Black, D.C. Marinescu, H.J. Siegel, T.L. Casavant, Models and algorithms for co-scheduling compute-intensive tasks on a network of workstations, *Journal of Parallel and Distributed Computing* 16 (1992) 319–327.
- [35] M. Auty, S. Creese, M. Goldsmith, P. Hopkins, Inadequacies of current risk controls for the cloud, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 659–666.
- [36] L. Ausubel, P. Cramton, Auctioning many divisible goods, *Journal of the European Economic Association* 2 (2–3) (2004) 480–493.
- [37] L. Ausubel, P. Cramton, P. Milgrom, The clock-proxy auction: a practical combinatorial auction design, in: P. Cramton, Y. Shoham, R. Steinberg (Eds.), *Combinatorial Auctions*, MIT Press, Cambridge, Mass, 2006, Chapter 5.
- [38] A. Avisienis, J.C. Laprie, B. Randell, C. Landwehr, Basic concepts and taxonomy of dependable and secure computing, *IEEE Transactions on Dependable and Secure Computing* 1 (1) (2004) 11–33.
- [39] Y. Azar, A. Broder, A. Karlin, E. Upfal, Balanced allocations, in: Proc. 26th ACM Symp. on the Theory of Computing, 1994, pp. 593–602.

- [40] Ö. Babaoglu, K. Marzullo, Consistent global states, in: Sape Mullender (Ed.), *Distributed Systems*, 2nd edition, Addison-Wesley, Reading, Ma, 1993, pp. 55–96.
- [41] M.J. Bach, M.W. Luppi, A.S. Melamed, K. Yueh, A remote-file cache for RFS, in: Proc. Summer 1987 USENIX Conf., 1987, pp. 275–280.
- [42] X. Bai, H. Yu, G.Q. Wang, Y. Ji, G.M. Marinescu, D.C. Marinescu, L. Böloni, Coordination in intelligent grid environments, *Proceedings of the IEEE* 93 (3) (2005) 613–630.
- [43] J. Baker, C. Bond, J.C. Corbett, J.J. Furman, A. Khorlin, J. Larson, J.-M. Léon, Y. Li, A. Lloyd, V. Yushprakh, Megastore: providing scalable, highly available storage for interactive services, in: Proc. 5th Biennial Conf. Innovative Data Systems Research, 2011, pp. 223–234.
- [44] M. Balduzzi, J. Zaddach, D. Balzarotti, E. Kirda, S. Loureiro, A security analysis of Amazon’s elastic compute cloud service, in: Proc. 27th Annual ACM Symp. Applied Computing, 2012, pp. 1427–1434.
- [45] J. Baliga, R.W. Ayre, K. Hinton, R.S. Tucker, Green cloud computing: balancing energy in processing, storage, and transport, *Proceedings of the IEEE* 99 (1) (2011) 149–167.
- [46] A-L. Barabási, R. Albert, Emergence of scaling in random networks, *Science* 286 (5439) (1999) 509–512.
- [47] A-L. Barabási, R. Albert, H. Jeong, Scale-free theory of random networks; the topology of World Wide Web, *Physica A* 281 (2000) 69–77.
- [48] P. Barham, B. Dragovic, K. Fraser, S. Hand, T. Harris, A. Ho, R. Neugebauer, I. Pratt, A. Warfield, Xen and the art of virtualization, in: Proc. 19th ACM Symp. Operating Systems Principles, 2003, pp. 164–177.
- [49] B. Baron, M. Campista, P. Spathis, L.H. Costa, M. Dias de Amorim, O.C. Duarte, G. Pujolle, Y. Viniotis, Virtualizing vehicular node resources: feasibility study of virtual machine migration, *Vehicular Communications* 4 (2016) 39–46.
- [50] L.A. Barroso, J. Dean, U. Hözle, Web search for a planet: the Google cluster architecture, *IEEE MICRO* 23 (2) (2003) 22–28.
- [51] L.A. Barroso, U. Hözle, The case for energy-proportional computing, *IEEE Computer* 40 (12) (2007) 33–37.
- [52] L.A. Barosso, U. Hözle, P. Ranganathan, *The Datacenter as a Computer; an Introduction to the Design of Warehouse-Scale Machines*, third edition, Morgan and Claypool, 2013.
- [53] L. Bottou, Large-scale machine learning with stochastic gradient descent, in: Proc. Int. Conf. on Computational Statistics, Springer Verlag, Heidelberg, 2010, pp. 177–186.
- [54] A. Bavier, T. Voigt, M. Wawrzoniak, L. Peterson, P. Gunningberg, SILK: Scout paths in the Linux kernel, Technical Report 2002-009, Uppsala University, Department of Information Technology, February 2002.
- [55] G. Bell, Massively parallel computers: why not parallel computers for the masses?, in: Proc. 4th Symp. Frontiers of Massively Parallel Computing, IEEE, 1992, pp. 292–297.
- [56] R. Bell, M. Koren, C. Volinsky, The BellKor 2008 solution to the Netflix Prize, Technical report, AT&T Labs, 2008.
- [57] M. Ben-Yehuda, M.D. Day, Z. Dubitzky, M. Factor, N. Har’El, A. Gordon, A. Ligouri, O. Wasserman, B.-A. Yassour, The Turtles project: design and implementation of nested virtualization, in: Proc. 9th USENIX Conf. on OS Design and Implementation, 2010, pp. 423–436.
- [58] D. Bernstein, E. Ludvigson, K. Sankar, S. Diamond, M. Morrow, Blueprint for the Intercloud - protocols and formats for cloud computing interoperability, in: Proc. 4th Int. Conf. Internet and Web Applications and Services, ICIW ’09, 2009, pp. 328–336.
- [59] D. Bernstein, D. Vij, Intercloud security considerations, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 537–544.
- [60] D. Bernstein, D. Vij, S. Diamond, An Intercloud cloud computing economy - technology, governance, and market blueprints, in: Proc. SRII Global Conference, 2011, pp. 293–299.
- [61] D. Bertsekas, R. Gallagher, *Data Networks*, second edition, Prentice Hall, Upper Saddle River, NJ, 1992.
- [62] S. Bertram, M. Boniface, M. Surridge, N. Briscombe, M. Hall-May, On-demand dynamic security for risk-based secure collaboration in clouds, in: Proc. IEEE 3rd Int. Conf. Cloud Computing, 2010, pp. 518–525.
- [63] S. Bhattacharjee, D.C. Marinescu, A cloud service for trust management in cognitive radio networks, *International Journal of Cloud Computing* 3 (14) (2014) 326–353.

- [64] M. Blackburn, A. Hawkins, Unused server survey results analysis, <https://silo.tips/download/unused-servers-survey-results-analysis>. (Accessed October 2021).
- [65] N.J. Boden, D. Cohen, R.E. Felderman, A.E. Kulawik, C.L. Seitz, J.N. Seizovic, W-K. Su, Myrinet – a gigabit-per-second local-area network, IEEE MICRO 5 (1) (1995) 29–36.
- [66] A. Boldyreva, N. Chenette, Y. Lee, A. O'Neill, Order-preserving symmetric encryption, in: Advances in Cryptology, Springer-Verlag, Heidelberg, 2009, pp. 224–241.
- [67] B. Bollobás, Random Graphs, Academic Press, London, 1985.
- [68] K. Boloor, R. Chirkova, Y. Viniotis, T. Salo, Dynamic request allocation and scheduling for context aware applications subject to a percentile response time SLA in a distributed cloud, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 464–472.
- [69] A. Boukerche, R.E. De Grande, Vehicular cloud computing: architectures, applications, and mobility, Computer Networks 135 (2018) 171–189.
- [70] I. Brandic, S. Dustdar, T. Ansett, D. Schumm, F. Leymann, R. Konrad, Compliant cloud computing (C3): architecture and language support for user-driven compliance management in clouds, in: Proc. IEEE 3rd Int. Conf. Cloud Computing, 2010, pp. 244–251.
- [71] S. Brandt, S. Banachowski, C. Lin, T. Bisson, Dynamic integrated scheduling of hard real-time, soft real-time, and non-real-time processes, in: Proc. IEEE Real-Time Systems Symp., 2003, pp. 396–409.
- [72] S. Brin, L. Page, The anatomy of a large-scale hypertextual web search engine, Journal of Computer Networks and ISDN Systems 30 (1–7) (1998) 107–117.
- [73] N.F. Britton, Essential Mathematical Biology, Springer-Verlag, Heidelberg, 2004.
- [74] S. Brooks, C.E.A. Hoare, A.W. Roscoe, A theory of communicating sequential processes, Journal of the ACM 31 (3) (1984) 560–599.
- [75] C. Brooks, Enterprise NoSQL for Dummies, Wiley, New Jersey, NJ, 2014.
- [76] M. Buddhikot, K. Ryan, Spectrum management in coordinated dynamic spectrum access based cellular networks, in: Proc. IEEE Int. Symp. New Frontiers in Dynamic Spectrum Access Networks, 2005, pp. 299–307.
- [77] Y. Bu, B. Howe, M. Balazinska, M.D. Ernst, HaLoop: efficient iterative data processing on large clusters, Proceedings of the VLDB Endowment 3 (2010) 285–296.
- [78] C. Bunch, N. Chohan, C. Krintz, J. Chohan, J. Kupferman, P. Lakhina, Y. Li, Y. Nomura, An evaluation of distributed data stores using the AppScale cloud platform, in: Proc. IEEE 3rd Int. Conf. Cloud Computing, 2010, pp. 305–312.
- [79] A.W. Burks, H.H. Goldstine, J. von Neumann, Preliminary discussion of the logical design of an electronic computer instrument, in: Report to the US Army Ordnance Department, 1946, also in: W. Asprey, A.W. Burks (Eds.), Papers of John von Neumann, MIT Press, Cambridge, MA, 1987, pp. 97–146.
- [80] B. Burns, B. Grant, D. Oppenheimer, E. Brewer, J. Wilkes, Borg, Omega, and Kubernetes; lessons learned from three container-management systems over a decade, ACM Queue 14 (1) (2016) 70–93.
- [81] M. Burrows, The Chubby lock service for loosely-coupled distributed systems, in: Proc. USENIX Symp. OS Design and Implementation, 2006, pp. 335–350.
- [82] B. Buth, J. Peleska, H. Shi, Combining methods for the livelock analysis of a fault-tolerant system, in: Proc. 7th Int. Conf. on Algebraic Methodology and Software Technology, 1998, pp. 124–139.
- [83] R. Buyya, R. Ranjan, R. Calheiros, Intercloud: utility-oriented federation of cloud computing environments for scaling of application services, in: Proc. 10th Int. Conf. Algorithms and Architectures for Parallel Processing, Part I, 2010, pp. 13–31.
- [84] C. Cacciari, F. D'Andria, M. Gonzalo, B. Hagemeier, D. Mallmann, J. Martrat, D.G. Perez, A. Rumpl, W. Ziegler, C. Zsigri, elasticLM: a novel approach for software licensing in distributed computing infrastructures, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 67–74.
- [85] D. Cash, S. Jarecki, C. Jutla, C.H. Krawczyk, M.C. Rosu, M. Steiner, Highly-scalable searchable symmetric encryption with support for Boolean queries, in: Advances in Cryptology, Springer-Verlag, Heidelberg, 2013, pp. 353–373.

- [86] A.J. Canty, A.C. Davison, D.V. Hinkley, V. Ventura, Bootstrap diagnostics and remedies, *Canadian Journal of Statistics* 34 (1) (2006) 5–27.
- [87] A.G. Carlyle, S.L. Harrell, P.M. Smith, Cost-effective HPC: the community or the cloud?, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 169–176.
- [88] E. Caron, F. Desprez, A. Muresan, Forecasting for grid and cloud computing on-demand resources based on pattern matching, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 456–463.
- [89] R. Cattell, Scalable SQL and NoSQL data stores, <http://cattell.net/databases/Datastores.pdf>, 2011. (Accessed August 2015).
- [90] C. Chambers, A. Raniwala, F. Perry, S. Adams, R.R. Henry, R. Bradshaw, N. Weizenbaum, FlumeJava: easy, efficient data-parallel pipelines, in: Proc. ACM SIGPLAN Conf. Programming Language Design and Implementation, 2010, pp. 363–375.
- [91] A. Chandra, P. Goyal, P. Shenoy, Quantifying the Benefits of Resource Multiplexing in on-Demand Data Centers, Computer Science Department Faculty Publication Series, vol. 20, 2003, [http://scholarworks.umass.edu/cs\\_faculty\\_pubs/20](http://scholarworks.umass.edu/cs_faculty_pubs/20). (Accessed January 2017).
- [92] T.D. Chandra, R. Griesemer, J. Redstone, Paxos made live: an engineering perspective, in: Proc. 26th ACM Symp. Principles of Distributed Computing, 2007, pp. 398–407.
- [93] K.M. Chandy, L. Lamport, Distributed snapshots: determining global states of distributed systems, *ACM Transactions on Computer Systems* 3 (1) (1985) 63–75.
- [94] F. Chang, J. Dean, S. Ghemawat, W.C. Hsieh, D.A. Wallach, M. Burrows, T. Chandra, A. Fikes, R.E. Gruber, Bigtable: a distributed storage system for structured data, in: Proc. USENIX Symp. on OS Design and Implementation, 2006, pp. 205–218.
- [95] V. Chang, G. Wills, D. De Roure, A review of cloud business models and sustainability, in: Proc. IEEE 3rd Int. Conf. Cloud Computing, 2010, pp. 43–50.
- [96] F. Chang, J. Ren, R. Viswanathan, Optimal resource allocation in clouds, in: Proc. IEEE 3rd Int. Conf. Cloud Computing, 2010, pp. 418–425.
- [97] L. Chang, Z. Wang, T. Ma, L. Jian, A. Golgshuv, L. Lonergan, J. Cohen, C. Welton, G. Sherry, M. Bhandarkar, HAWQ: a massively parallel processing SQL engine in Hadoop, in: Proc. ACM SIGMOD Int. Conf. Data Management, 2014, pp. 1223–1234.
- [98] K. Chard, S. Caton, O. Rana, K. Bubendorfer, Social cloud: cloud computing in social networks, in: Proc. IEEE 3rd Int. Conf. Cloud Computing, 2010, pp. 99–106.
- [99] A. Chazalet, Service level checking in the cloud computing context, in: Proc. IEEE 3rd Int. Conf. Cloud Computing, 2010, pp. 297–304.
- [100] P.M. Chen, B.D. Noble, When virtual is better than real, in: Proc. 8th Workshop Hot Topics in Operating Systems, 2001, pp. 133–141.
- [101] H. Chen, P. Liu, R. Chen, B. Zang, When OO meets system software: Rethinking the design of VMMs, Technical Report PPITR-2007-08003, Fudan University, Parallel Processing Institute, 2007, pp. 1–9.
- [102] T.M. Chen, S. Abu-Nimeh, Lessons from Stuxnet, *Computer* 44 (4) (2011) 91–93.
- [103] R. Chen, J.-M. Park, K. Bian, Robust distributed spectrum sensing in cognitive radio networks, in: Proc. IEEE Conf. Computer Communications, 2008, pp. 1876–1884.
- [104] Y. Chen, S. Alspaugh, R. Katz, Interactive analytical processing in big data systems: a cross-industry study of MapReduce workloads, *Proceedings of the VLDB Endowment* 5 (12) (2012) 1802–1813.
- [105] J. Cheney, L. Chiticariu, W.-C. Tan, Provenance in databases: why, how, and where, *Foundations and Trends in Databases* 1 (4) (2007) 379–474.
- [106] D. Chiu, G. Agarwal, Evaluating cache and storage options on the Amazon Web services cloud, in: Proc. IEEE/ACM Int. Symp. Cluster, Cloud and Grid Computing, 2011, pp. 362–371.
- [107] R. Chow, P. Golle, M. Jacobsson, E. Shi, J. Staddon, R. Masouka, J. Mollina, Controlling data on the cloud: outsourcing computations without outsourcing control, in: Proc. ACM Cloud Computing Security Workshop, 2009, pp. 85–90.

- [108] B. Clark, T. Deshane, E. Dow, S. Evabchik, M. Finlayson, J. Herne, J.N. Matthews, Xen and the art of repeated research, in: Proc. USENIX Annual Technical Conference, 2004, pp. 135–144.
- [109] R.A. Clarke, R.K. Knake, Cyber War: The Next Threat to National Security and What to do About It, Harper Collins, 2012.
- [110] C. Clos, A study of non-blocking switching networks, *The Bell System Technical Journal* 32 (2) (1953) 406–425.
- [111] E.F. Codd, A relational model of data for large shared data banks, *Communications of the ACM* 13 (6) (1970) 377–387.
- [112] E. Coffman, M.J. Elphick, S. Shoshani, System deadlocks, *Computing Surveys* 3 (2) (1971) 67–78.
- [113] L. Colitti, S.H. Gunderson, E. Kline, T. Refice, Evaluating IPv6 adoption in the Internet, in: Proc. Passive and Active Measurement Conf., in: Lecture Notes on Computer Science, vol. 6032, Springer-Verlag, Heidelberg, 2010, pp. 141–150.
- [114] P. Colp, M. Nanavati, J. Zhu, W. Aiello, G. Coker, T. Deegan, P. Loscocco, A. Warfield, Breaking up is hard to do: security and functionality in a commodity hypervisor, in: Proc. 23rd ACM Symp. Operating Systems Principles, 2011, pp. 189–202.
- [115] F.J. Corbatò, V.A. Vyssotsky, Introduction and overview of the MULTICS system, in: Proc. AFIPS, Fall Joint Computer Conf., 1965, pp. 185–196.
- [116] F.J. Corbatò, On building systems that will fail, Turing Award Lecture 1991, <http://larch-www.lcs.mit.edu:8001/~corbato/turing91/>, 2011.
- [117] J.C. Corbett, J. Dean, M. Epstein, A. Fikes, C. Frost, J.J. Furman, S. Ghemawat, A. Gubarev, C. Heiser, P. Hochschild, W. Hsieh, S. Kanthak, E. Kogan, H. Li, A. Lloyd, S. Melnik, D. Mwaura, D. Nagle, S. Quinlan, R. Rao, L. Rolig, Y. Saito, M. Szymaniak, C. Taylor, R. Wang, D. Woodford, Spanner: Google's globally-distributed database, in: Proc. USENIX Symp. on Operating Systems Design and Implementation, vol. 31(3), 2012, Paper #8.
- [118] P. Cramton, Y. Shoham, R. Steinberg (Eds.), Combinatorial Auctions, MIT Press, 2006.
- [119] F. Cristian, H. Aghili, R. Strong, D. Dolev, Atomic broadcast from simple message diffusion to Byzantine agreement, in: Proc. 15th Int. Symp. Fault Tolerant Computing, IEEE Press, 1985, pp. 200–206, also *Information and Computation* 118 (1) (1995) 158–179.
- [120] Cloud Security Alliance, Security guidance for critical areas of focus in cloud computing V2.1, <https://wikileaks.org/sony/docs/05/docs/Cloud/csaguide.pdf>, 2009.
- [121] Cloud Security Alliance, Top threats to cloud computing V1.0, <https://cloudsecurityalliance.org/toptreats/csathreats.v1.0.pdf>, 2010. (Accessed August 2015).
- [122] Cloud Security Alliance, Security guidance for critical areas of focus in cloud computing V3.0, <https://cloudsecurityalliance.org/guidance/csaguide.v3.0.pdf>, 2011. (Accessed August 2015).
- [123] Cloud Security Alliance, Security guidance for critical areas of focus in cloud computing v4.0, <https://cloudsecurityalliance.org/artifacts/security-guidance-v4/>. (Accessed April 2021).
- [124] E. Cuervo, A. Balasubramanian, D.-K. Cho, A. Wolman, S. Saroiu, R. Chandra, P. Bahl, MAUI: making smartphones last longer with code offload, in: Proc. 8th Int. Conf. on Mobile Systems, Applications, and Services, 2010, pp. 49–62.
- [125] L. Cuen, The debate about cryptocurrency and energy consumption, <https://techcrunch.com/2021/03/21/the-debate-about-cryptocurrency-and-energy-consumption/>, 2021. (Accessed April 2021).
- [126] C. Curino, D.E. Difallah, C. Douglas, S. Krishnan, R. Ramakrishnan, S. Rao, Reservation-based scheduling: if you're late don't blame us!, in: Proc. ACM Symp. Cloud Computing, 2014, pp. 1–14.
- [127] B. Das, Y.Z. Zhang, J. Kiszka, Nested virtualization; state of the art and future directions, in: KVM Forum, 2014, also <http://www.linux-kvm.org/images/3/33/02x03-NestedVirtualization.pdf>. (Accessed January 2017).
- [128] H.A. David, Order Statistics, Wiley, New York, NY, 1981.
- [129] J. Dean, S. Ghernawat, MapReduce: simplified data processing on large clusters, in: Proc. USENIX 6-th Symp. OS Design and Implementation, 2004, pp. 137–149.

- [130] J. Dean, L.A. Barroso, The tail at scale, *Communications of the ACM* 56 (2) (2013) 74–80.
- [131] J. Dean, The rise of cloud computing systems, in: Proc. ACM Symp. OS Principles, 2015, Article No. 12, also <http://sigops.org/sosp/sosp15/history/10-dean-slides.pdf>. (Accessed August 2016).
- [132] J. DeBrabant, A. Pavlo, S. Tu, M. Stonebraker, S. Zdonik, Anti-caching: a new approach to database management system architecture, *Proceedings of the VLDB Endowment* 6 (2013) 1942–1953.
- [133] G. DeCandia, D. Hastorun, M. Jampani, G. Kakulapati, A. Lakshman, A. Pilchin, S. Sivasubramanian, P. Vosshall, W. Vogels, Dynamo: Amazon's highly available key-value store, in: Proc. 21st ACM/SIGOPS Symp. OS Principles, 2007, pp. 205–220.
- [134] C. Delimitrou, C. Kozyrakis, QoS Aware scheduling for heterogeneous data centers with Paragon, *ACM Transactions on Computer Systems* 31 (4) (2013) 12–24.
- [135] C. Delimitrou, C. Kozyrakis, The Netflix challenge: datacenter edition, *IEEE Computer Architecture Letters* 12 (1) (2013) 29–32.
- [136] C. Delimitrou, C. Kozyrakis, Quasar: resource-efficient and QoS-aware cluster management, in: Proc. ACM Int. Conf. on Architectural Support for Programming Languages and Operating Systems, 2014, pp. 127–144.
- [137] Y. Demchenko, C. de Laat, D.R. Lopes, Security services lifecycle management in on-demand infrastructure services provisioning, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 644–650.
- [138] A. Demers, S. Keshav, S. Shenker, Analysis and simulation of a fair queuing algorithm, in: Proc. ACM SIGCOMM'89 Symp. Communications Architectures and Protocols, 1989, pp. 1–12.
- [139] J.B. Dennis, General parallel computation can be performed with a cycle-free heap, in: Procs. 1998 Int. Conf. on Parallel Architectures and Compiling Techniques, IEEE, 1998, pp. 96–103.
- [140] J.B. Dennis, Fresh breeze: a multiprocessor chip architecture guided by modular programming principles, *ACM SIGARCH Computer Architecture News* 31 (1) (2003) 7–15.
- [141] J.B. Dennis, The fresh breeze model of thread execution, in: Proc. Workshop on Programming Models for Ubiquitous Parallelism, 2006, also <http://csg.csail.mit.edu/Users/dennis/pmup-final.pdf>. (Accessed January 2017).
- [142] D. Denisson, Continuous pipelines at Google, [https://www.usenix.org/sites/default/files/continuouspipe\\_linesatgooglefinal.pdf](https://www.usenix.org/sites/default/files/continuouspipe_linesatgooglefinal.pdf), 2015. (Accessed May 2016).
- [143] M. Devarakonda, B. Kish, A. Mohindra, Recovery in the Calypso file system, *ACM Transactions on Computer Systems* 14 (3) (1996) 287–310.
- [144] D.J. DeWitt, R.V. Nehme, S. Shankar, J. Aguilar-Saborit, A. Avanes, M. Flasza, J. Gramling, Split query processing in polybase, in: Proc. ACM SIGMOD Int. Conf. on Management of Data, 2013, pp. 1255–1266.
- [145] M.D. Dikaiakos, D. Katsaros, P. Mehra, G. Pallis, A. Vakali, Cloud computing: distributed Internet computing for IT and scientific research, *IEEE Internet Computing* 13 (5) (2009) 10–13.
- [146] E.W. Dijkstra, Cooperating sequential processes, in: F. Genuys (Ed.), *Programming Languages*, Academic Press, New York, 1968, pp. 43–112, originally appeared in 1965, E.W. Dijkstra Archive: Cooperating sequential processes (EWD 123), <https://www.cs.utexas.edu/~EWD/transcriptions/EWD01xx/EWD123.html>.
- [147] E.W. Dijkstra, Self-stabilizing systems in spite of distributed control, *Communications of the ACM* 17 (11) (1974) 643–644.
- [148] H.T. Dinh, C. Lee, D. Niyato, P. Wang, A survey of mobile cloud computing: architecture, applications, and approaches, *Wireless Communications and Mobile Computing* 13 (2013) 1587–1611, <https://doi.org/10.1002/wcm.1203>.
- [149] DONA, Data Oriented Network Architecture, <https://www2.eecs.berkeley.edu/Research/Projects/Data/102146.html>. (Accessed December 2016).
- [150] P. Donnelly, P. Bui, D. Thain, Attaching cloud storage to a campus grid using Parrot, Chirp, and Hadoop, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 488–495.
- [151] T. Dörnemann, E. Juhnke, T. Noll, D. Seiler, B. Freileben, Data flow driven scheduling of BPEL workflows using cloud resources, in: Proc. IEEE 3rd Int. Conf. Cloud Computing, 2010, pp. 196–203.

- [152] S. Drossopoulou, J. Noble, M.S. Miller, T. Murray, Reasoning about risk and trust in an open word, <http://static.googleusercontent.com/media/research.google.com/en/pubs/archive/44272.pdf>, 2015. (Accessed August 2016).
- [153] L. Ducas, D. Micciancio, Fhew: bootstrapping homomorphic encryption in less than a second, in: Advances in Cryptology, Springer-Verlag, Heidelberg, 2015, pp. 617–640.
- [154] K.J. Duda, R.R. Cheriton, Borrowed-Virtual-Time (BVT) scheduling: supporting latency-sensitive threads in a general-purpose scheduler, in: Proc. 17th ACM Symp. OS Principles, 1999, pp. 261–276.
- [155] N. Dukkipati, T. Refice, Y.-C. Cheng, J. Chu, T. Herbert, A. Agarwal, A. Jain, N. Sutin, An argument for increasing TCP's initial congestion window, ACM SIGCOMM Computer Communication Review 40 (3) (2010) 27–33.
- [156] X. Dutreild, N. Rivierre, A. Moreau, J. Malenfant, I. Truck, From data center resource allocation to control theory and back, in: Proc. IEEE 3rd Int. Conf. Cloud Computing, 2010, pp. 410–417.
- [157] G. Dyson, Turing's Cathedral: The Origins of the Digital Universe, Pantheon, 2012.
- [158] D.L. Eager, E.D. Lazowska, J. Zahorjan, Adaptive load sharing in homogeneous distributed systems, IEEE Transactions on Software Engineering 12 (1986) 662–675.
- [159] D. Ebneter, S.G. Grivas, T.U. Kumar, H. Wache, Enterprise architecture frameworks for enabling cloud computing, in: Proc. IEEE 3rd Int. Conf. Cloud Computing, 2010, pp. 542–543.
- [160] V.M. Eguiluz, K. Klemm, Epidemic threshold in structured scale-free networks, arXiv:cond-mat/0205439v1, 2002.
- [161] J. Ejarque, R. Sirvent, R.M. Badia, A multi-agent approach for semantic resource allocation, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 335–342.
- [162] M. Elhawary, Z.J. Haas, Energy-efficient protocol for cooperative networks, IEEE/ACM Transactions on Networking 19 (2) (2011) 561–574.
- [163] M. Eltoweissy, S. Olariu, M. Younis, Towards autonomous vehicular clouds, in: Proc. AdHocNets 2010, August 2010.
- [164] Enterprise Management Associates, How to make the most of cloud computing without sacrificing control, White Paper, prepared for IBM, September 2010, 18 pp., <http://www.siliconrepublic.com/reports/partner/26-ibm/report/311-how-to-make-the-most-of-clo/>. (Accessed August 2015).
- [165] P. Erdős, A. Rényi, On random graphs, Publicationes Mathematicae 6 (1959) 290–297.
- [166] R.M. Esteves, C. Rong, Social impact of privacy in cloud computing, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 593–596.
- [167] C. Evangelinos, C.N. Hill, Cloud computing for parallel scientific HPC applications: feasibility of running coupled atmosphere-ocean climate models on Amazon's EC2, in: Workshop on Cloud Computing and Its Applications, 2008.
- [168] S. Faber, S. Jarecki, H. Krawczyk, Q. Nguyen, M. Rosu, M. Steiner, Rich queries on encrypted data: beyond exact matches, in: Proc. 20th Euro. Symp. Research in Computer Security, in: Lecture Notes on Computer Science, vol. 9327, Springer-Verlag, Heidelberg, 2015, pp. 123–145.
- [169] A.D.H. Farwell, M.J. Sergot, M. Salle, C. Bartolini, D. Tresour, A. Christodoulou, Performance monitoring of service-level agreements for utility computing, in: Proc. IEEE. Int. Workshop Electronic Contracting, 2004, pp. 17–24.
- [170] M. Ferdman, B. Falsafi, A. Adileh, O. Kocberber, S. Volos, M. Alisafaee, D. Jevdjic, C. Kaynak, A.D. Popescu, A. Ailamaki, Clearing the clouds, in: Proc. 17th Int. Conf. on Architectural Support for Programming Languages and Operating Systems, ACM, New York, NY, 2012, pp. 37–48.
- [171] S. Ferretti, V. Ghini, F. Panzieri, M. Pellegrini, E. Turrini, QoS-aware clouds, in: Proc. IEEE 3rd Int. Conf. Cloud Computing, 2010, pp. 321–328.
- [172] Federal Trade Comision, Privacy online: for information practice in the electronic marketplace, <https://www.ftc.gov/reports/privacy-online-fair-information-practices-electronic-marketplace-federal-trade-commission>, 2000. (Accessed August 2015).

- [173] A. Fikes, Storage architecture and challenges, <https://www.systutorials.com/3306/storage-architecture-and-challenges/>. (Accessed March 2017).
- [174] M. Fingerhuth, T. Babej, P. Wittek, Open source software in quantum computing, *PLoS ONE* 13 (12) (2018), also <https://doi.org/10.1371/journal.pone.0208561>, 2018. (Accessed July 2020).
- [175] M.J. Fischer, N.A. Lynch, M.S. Paterson, Impossibility of distributed consensus with one faulty process, *Journal of the ACM* 32 (2) (1985) 374–382.
- [176] A. Floratou, U.F. Minhas, F. Oğcan, SQLonHadoop: full circle back to shared-nothing database architectures, *Proceedings of the VLDB Endowment* 7 (12) (2014) 1295–1306.
- [177] R. Florin, P. Ghazizadeh, A. Ghazi Zadeh, S. El-Tawab, S. Olariu, Reasoning about job completion time in vehicular clouds, *IEEE Transactions on Intelligent Transportation Systems* 18 (7) (2017) 1762–1771.
- [178] R. Florin, S. Abolghasemi, A. Ghazi Zadeh, S. Olariu, Big data in the parking lot, in: *Big Data Management and Processing*, Taylor and Francis, 2017, pp. 425–449.
- [179] R. Florin, A. Ghazi Zadeh, P. Ghazizadeh, S. Olariu, Towards approximating job completion time in vehicular clouds, *IEEE Transactions on Intelligent Transportation Systems* 20 (7) (2019) 3168–3177.
- [180] R. Florin, A. Ghazi Zadeh, P. Ghazizadeh, S. Olariu, A tight estimate of job completion time in vehicular clouds, *IEEE Transactions on Cloud Computing* 8 (3) (2020) 721–734.
- [181] S. Floyd, Van Jacobson, Link-sharing and resource management models for packet networks, *IEEE/ACM Transactions on Networking* 3 (4) (1995) 365–386.
- [182] B. Ford, Icebergs in the clouds; the other risks of cloud computing, in: Proc. 4th USENIX Workshop Hot Topics in Cloud Computing, 2012, arXiv:1203.1979v2.
- [183] M. Franklin, A. Halevy, D. Maier, From databases to dataspaces: a new abstraction for information management, *SIGMOD Record* 34 (4) (2005) 27–33.
- [184] J. Franklin, K. Bowler, C. Brown, S. Edwards, N. McNab, M. Steele, Mobile device security - cloud and hybrid builds, *NIST Special Publication 1800-4b* (2015).
- [185] E. Gafni, D. Bertsekas, Dynamic control of session input rates in communication networks, *IEEE Transactions on Automatic Control* 29 (10) (1984) 1009–1016.
- [186] G. Ganesan, Y.G. Li, Cooperative spectrum sensing in cognitive radio networks, in: Proc. IEEE Symp. New Frontiers in Dynamic Spectrum Access Networks, 2005, pp. 137–143.
- [187] A.G. Ganek, T.A. Corbi, The dawning of the autonomic computing era, *IBM Systems Journal* 42 (1) (2003) 5–18.
- [188] M.R. Garey, D.S. Johnson, *Computers and Intractability: A Guide to the Theory of NP-Completeness*, W.H. Freeman and Co., 1979.
- [189] S. Garfinkel, M. Rosenblum, When virtual is harder than real: security challenges in virtual machines based computing environments, in: Proc. 10th Conf. Hot Topics in Operating Systems, 2005, pp. 20–25.
- [190] A.F. Gates, O. Natkovich, S. Chopra, P. Kamath, S.M. Narayananamurthy, C. Olston, B. Reed, S. Srinivasan, U. Srivastava, Building a high-level dataflow system on top of MapReduce: the Pig experience, *Proceedings of the VLDB Endowment* 2 (2) (2009) 1414–1425.
- [191] M. Gell-Mann, Simplicity and complexity in the description of nature, *Engineering Sciences* 51 (3) (1988) 2–9, California Institute of Technology, <http://resolver.caltech.edu/CaltechES:51.3.Mann>.
- [192] C. Gentry, A fully homomorphic encryption scheme, Ph.D. Thesis, Stanford University, 2009.
- [193] C. Gentry, Fully homomorphic encryption using ideal lattices, in: Proc. 41st ACM Symp. Theory of Computing, 2009, pp. 169–178.
- [194] M. Gerla, Vehicular cloud computing, in: Proc. 1st Int. Workshop Vehicular Communication and Applications, IEEE, 2012, pp. 152–155, published in 11th Med. Ad Hoc Networking Workshop.
- [195] C. Gkantsidis, M. Mihail, A. Saberi, Random walks in peer-to-peer networks, *Performance Evaluation* 63 (3) (2006) 241–263.
- [196] P. Ghazizadeh, R. Florin, R.A. Ghazi Zadeh, S. Olariu, Reasoning about the mean time to failure in vehicular clouds, *IEEE Transactions on Intelligent Transportation Systems* 3 (17) (2016) 751–761.

- [197] S. Ghemawat, H. Gobioff, S.-T. Leung, The Google file system, in: Proc. 19th ACM Symp. OS Principles, SOSP 03, 2003, pp. 15–25.
- [198] S. Gilbert, N. Lynch, Perspectives on the CAP theorem, <https://groups.csail.mit.edu/tds/papers/Gilbert/Brewer2.pdf>. (Accessed April 2021).
- [199] D. Gmach, J. Rolia, L. Cerkasova, Satisfying service-level objectives in a self-managed resource pool, in: Proc. 3rd. Int. Conf. Self-Adaptive and Self-Organizing Systems, 2009, pp. 243–253.
- [200] R.P. Goldberg, Architectural principles for virtual computer systems, Thesis, Harvard University, 1973.
- [201] R.P. Goldberg, Survey of virtual machine research, IEEE Computer Magazine 7 (6) (1974) 34–45.
- [202] G. Gonnet, Expected length of the longest probe sequence in hash code searching, Journal of the ACM 28 (2) (1981) 289–304.
- [203] I. Goodfellow, Y. Bengio, A. Courville, Deep Learning, MIT Press, Boston, Mass, 2016.
- [204] Google, Google cloud platform, <https://cloud.google.com/>. (Accessed August 2016).
- [205] P. Goyal, X. Guo, H.M. Vin, A hierachial CPU scheduler for multimedia operating systems, in: Proc. USENIX Symp. OS Design and Implementation, 1996, pp. 107–121.
- [206] J. Gray, The transaction concept: virtues and limitations, in: Proc. 7th Int. Conf. Very Large Databases, 1981, pp. 144–154.
- [207] J. Gray, D. Patterson, A conversation with Jim Gray, ACM Queue 1 (4) (2003) 8–17.
- [208] G. Graefe, H. Volos, H. Kimura, H. Kuno, J. Tucek, In memory performance for Big Data, Proceedings of the VLDB Endowment 8 (1) (2014) 37–48.
- [209] T.G. Griffn, F.B. Shepherd, G. Wilfong, The stable paths problem and interdomain routing, IEEE/ACM Transactions on Networking 10 (2) (2002) 232–243.
- [210] M. Gittert, D.R. Cheriton, An architecture for content routing support in the Internet, in: Proc. USENIX Symp. on Internet Technologies and Systems, vol. 3, 2001, p. 4.
- [211] W. Gropp, E. Lusk, A. Skjellum, Using MPI, MIT Press, 1994.
- [212] N. Gruschka, M. Jensen, Attack surfaces: a taxonomy for attacks on cloud services, in: Proc. IEEE 3rd Int. Conf. Cloud Computing, 2010, pp. 276–279.
- [213] T. Gunaratne, T.-L. Wu, J. Qiu, G. Fox, MapReduce in the clouds for science, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 565–572.
- [214] P.K. Gunda, L. Ravindranath, C.A. Thekkath, Y. Yu, L. Zhuang, Nectar: automatic management of data and computation in data centers, in: Proc. USENIX Symp. OS Design and Implementation, 2010, pp. 75–88.
- [215] I. Gupta, A.J. Ganesh, A.-M. Kermarrec, Efficient and adaptive epidemic-style protocols for reliable and scalable multicast, IEEE Transactions on Parallel and Distributed Systems 17 (7) (2006) 593–605.
- [216] V. Gupta, M. Harchol-Balter, Self-adaptive admission control policies for resource-sharing systems, in: Proc. 11th Int. Joint Conf. Measurement and Modeling Computer Systems, 2009, pp. 311–322.
- [217] A. Gupta, F. Yang, J. Govig, A. Kirsch, K. Chan, K. Lai, S. Wu, S.G. Dhoot, A.R. Kumar, A. Agiwal, S. Bhansali, M. Hong, J. Cameron, M. Siddiqi, D. Jones, J. Shute, A. Gubarev, S. Venkataraman, D. Agrawal, Mesa: geo-replicated, near real-time, scalable data warehousing, Proceedings of the VLDB Endowment 7 (12) (2014) 1259–1270.
- [218] A. Gupta, J. Shute, High-availability at massive scale: building Google’s data infrastructure for ads, in: Proc. 9th Workshop Business Intelligence for the Real Time Enterprise, Springer-Verlag, Heidelberg, 2015, pp. 81–89.
- [219] J.O. Gutierrez-Garcia, K.-M. Sim, Self-organizing agents for service composition in cloud computing, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 59–66.
- [220] P.J. Haas, Hoeffding inequalities for join-selectivity estimation and online aggregation, IBM Research Report RJ 10040 (90568), IBM Almaden Research, 1996.
- [221] T. Haig, M. Pристley, C. Rope, Los Alamos bets on ENIAC: nuclear Monte Carlo simulations, 1947–1948, IEEE Annals of the History of Computing 36 (3) (2014) 42–63.

- [222] F.A. Halderman, S.D. Schoen, N. Heninger, W. Clarkson, W. Paul, J.A. Calandino, A.J. Feldman, J. Appelbaum, E.W. Felten, Lest we remember: cold boot attacks on encryption keys, in: Proc. 17th Usenix, Security Symposium, 2008, pp. 45–60.
- [223] S. Halevi, V. Shoup, Algorithms in HElib, in: J.A. Garay, R. Gennaro (Eds.), Advances in Cryptology, in: Lecture Notes on Computer Science, vols. 8616 and 8617, Springer-Verlag, Heidelberg, 2014, pp. 554–571.
- [224] J.D. Halley, D.A. Winkler, Classification of emergence and its relation to self-organization, Complexity 13 (5) (2008) 10–15.
- [225] P.B. Hansen, The evolution of operating systems, in: P.B. Hansen (Ed.), Classic Operating Systems: from Batch Processing to Distributed Systems, Springer-Verlag, Heidelberg, 2001, pp. 1–36.
- [226] R.F. Hartl, S.P. Sethi, R.G. Vickson, Survey of the maximum principles for optimal control problems with state constraints, SIAM Review 37 (2) (1995) 181–218.
- [227] T. Härder, A. Reuter, Principles of transaction-oriented database recovery, ACM Computing Surveys 15 (4) (1983) 287–317.
- [228] S. Harizopoulos, D.J. Abadi, S. Madden, M. Stonebreaker, OLTP through the looking glass, and what we found there, in: Proc. ACM/SIGMOD Int. Conf. on Management of Data, 2008, pp. 981–992.
- [229] K. Hasebe, T. Niwa, A. Sugiki, K. Kato, Power-saving in large-scale storage systems with data migration, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 266–273.
- [230] R.L. Haskin, Tiger Shark - a scalable file system for multimedia, IBM Journal of Research and Development 42 (2) (1998) 185–197.
- [231] J.L. Hellerstein, Why feedback implementations fail: the importance of systematic testing, in: 5th Int. Workshop on Feedback Control Implementation and Design in Computing Systems and Networks, 2015.
- [232] J.L. Hennessy, D.A. Patterson, Computer Architecture - a Quantitative Approach, sixth edition, Morgan Kaufmann, Waltham, MA, 2017.
- [233] M. Herlihy, N. Shavit, The Art of Multiprocessor Programming, revised reprint, Morgan Kaufmann, Waltham, MA, 2012.
- [234] H. Herodotou, H. Lim, G. Luo, N. Borisov, L. Dong, F.B. Cetin, S. Babu, Starfish: a self-tuning system for big data analytics, in: Proc. 5th Conf. on Innovative Data Systems Research, 2011, pp. 261–272.
- [235] T. Hey, S. Tansley, K. Tolle, Jim Gray on eScience: a transformed scientific method, in: The Fourth Paradigm. Data-Intensive Scientific Discovery, Microsoft Research, 2009.
- [236] M. Hilbert, P. López, The world's technological capacity to store, communicate, and compute information, Science 332 (6025) (2011) 60–65.
- [237] M. Hill, S. Eggers, J.R. Larus, G. Taylor, G. Adams, B.K. Bose, G. Gibson, P. Hansen, J. Keller, S. Kong, C. Lee, D. Lee, J. Pendleton, S. Richie, D. Wood, B. Zorn, P. Hilfinger, D. Hodges, R. Katz, J.K. Osterhout, J. Petterson, Design decisions in SPUR, Computer 9 (11) (1986) 8–22.
- [238] M.D. Hill, M.R. Marty, Amdahl's law in the multicore era, IEEE Computer 41 (7) (2008) 33–38.
- [239] M. Hinckey, R. Sterritt, C. Rouff, J. Rash, W. Truszkowski, Swarm-based space exploration, ERCIM News 64 (2006).
- [240] B. Hindman, A. Konwinski, M. Zaharia, A. Ghodsi, A.D. Joseph, R. Katz, S. Shenker, I. Stoica, Mesos: a platform for fine-grained resource sharing in the data center, in: Proc. 8th USENIX Symp. Networked Systems Design and Implementation, 2011, pp. 295–308.
- [241] C.A.R. Hoare, Communicating sequential processes, Communications of the ACM 21 (8) (1978) 666–677.
- [242] U. Hölzle, Brawny cores still beat wimpy cores, most of the time, IEEE MICRO 30 (4) (2010) 3.
- [243] J. Hopfield, Neural networks and physical systems with emergent collective computational abilities, Proceedings of the National Academy of Sciences 79 (1982) 2554–2558.
- [244] C. Hopps, Analysis of an equal-cost multi-path algorithm, in: RFC 2992, Internet Engineering Task Force, 2000.
- [245] J.H. Howard, M.L. Kazer, S.G. Menees, D.A. Nichols, M. Satyanarayanan, R.N. Sidebotham, M.J. West, Scale and performance in a distributed file system, ACM Transactions on Computer Systems 6 (1) (1988) 51–81.

- [246] D.H. Hu, Y. Wang, C.-L. Wang, BetterLife 2.0: large-scale social intelligence reasoning on cloud, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 529–536.
- [247] C. Huang, R. Lu, H. Zhu, H. Hu, X. Lin, PTVC: achieving privacy-preserving trust-based verifiable vehicular cloud computing, in: Proc. IEEE Global Comm. Conf., GLOBECOM 2016, 2016, pp. 1–6.
- [248] G. Iachello, J. Hong, End-user privacy in human-computer interaction, Foundations and Trends in Human-Computer Interactions 1 (1) (2007) 1–137.
- [249] IBM Smart Business, Dispelling the vapor around the cloud computing. Drivers, barriers and considerations for public and private cloud adoption, White Paper, 2010, <ftp://software.ibm.com/common/ssi/ecm/en/ciw03062usen/CIW03062USEN.PDF>. (Accessed August 2015).
- [250] IBM Corporation, General parallel file systems (version 3, update 4). Documentation Updates, <http://publib.boulder.ibm.com/infocenter/clresctr/vxrx/topic/com.ibm.cluster.gpfs.doc>. (Accessed August 2015).
- [251] IBM Corporation, The evolution of storage systems, IBM Research, Almaden Research Center Publications, <http://www.almaden.ibm.com/storagesystems/pubs>. (Accessed August 2015).
- [252] IBM Corporation, Bringing big data to the enterprise, <https://www-01.ibm.com/software/in/data/bigdata/>, 2015. (Accessed May 2016).
- [253] Intel Corporation, Intel 64 and IA-32 architectures software developer manuals, <https://software.intel.com/en-us/node/699529#combined>, 2016. (Accessed January 2017).
- [254] M. Iorga, A. Karmel, Managing risk in a cloud ecosystem, IEEE Cloud Computing 2 (6) (2015) 51–57.
- [255] M. Isard, M. Budiu, Y. Yu, A. Birrell, D. Fetterly, Dryad: distributed data-parallel programs from sequential building blocks, in: Proc. 2nd ACM SIGOPS/EuroSys European Conf. Computer Systems, 2007, pp. 57–62.
- [256] K.R. Jackson, L. Ramakrishnan, K. Muriki, S. Canon, S. Cholia, J. Shalf, H. Wasserman, N.J. Wright, Performance analysis of high performance computing applications on the Amazon Web Services cloud, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 159–168.
- [257] D. Jaggar, A history of the ARM microprocessor, Google Talks, [https://www.youtube.com/results?search\\_query=David+Jaggar](https://www.youtube.com/results?search_query=David+Jaggar), 2019.
- [258] M. Jelasity, A. Montresor, O. Babaoglu, Gossip-based aggregation in large dynamic networks, ACM Transactions on Computer Systems 23 (3) (2005) 219–252.
- [259] M. Jelasity, S. Voulgaris, R. Guerraoui, A.-M. Kermarrec, M. van Steen, Gossip-based peer sampling, ACM Transactions on Computer Systems 25 (3) (2007) 8.
- [260] M. Jensen, S. Schäge, J. Schwenk, Towards an anonymous access control and accountability scheme for cloud computing, in: Proc. IEEE 3rd Int. Conf. Cloud Computing, 2010, pp. 540–541.
- [261] H. Jin, X.-H. Sun, Y. Chen, T. Ke, REMEM: REmote MEMory as checkpointing storage, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 319–326.
- [262] N.P. Jouppi, et al., In-datacenter performance analysis of a tensor processing unit, <https://arxiv.org/pdf/1704.04760.pdf>, 2017.
- [263] R. Kallman, H. Kimura, J. Atkins, A. Pavlo, A. Rasin, S. Zdonik, E. Jones, Y. Zhang, S. Madden, M. Stonebraker, J. Hugg, D.J. Abadi, H-Store: a high-performance, distributed main memory transaction processing system, Proceedings of the VLDB Endowment 1 (2) (2008) 1496–1499.
- [264] E. Kalyvianaki, T. Charalambous, S. Hand, Applying Kalman filters to dynamic resource provisioning of virtualized server applications, in: Proc. 3rd Int. Workshop Feedback Control Implementation & Design in Computing Systems & Networks, 2008, p. 6.
- [265] S. Kaney, J.P. Darago, K. Hazelwood, P. Ranganathan, T. Moseley, G-Y. Wei, D. Brooks, Profiling a warehouse-scale computer, in: Proc. 42nd Annual Int. Symp. Computer Architecture, ISCA, 2015, pp. 158–169.
- [266] R.M. Karp, M. Luby, F. Meyer auf der Heide, Efficient PRAM simulation on a distributed memory machine, in: Proc. 24th ACM Symp. on the Theory of Computing, 1992, pp. 318–326.
- [267] K. Kc, K. Anyanwu, Scheduling Hadoop jobs to meet deadlines, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 388–392.

- [268] J. Kephart, H. Chan, R. Das, D. Levine, G. Tesauro, F. Rawson, C. Lefurgy, Coordinating multiple autonomic managers to achieve specified power-performance tradeoffs, in: Proc. 4th Int. Conf. Autonomic Computing, 2007, pp. 100–109.
- [269] J. Kephart, The utility of utility: policies for autonomic computing, in: Proc. LCCC Workshop Control of Computing Systems, 2011.
- [270] W.O. Kermack, A.G. McKendrick, A contribution to the theory of epidemics, *Proceedings of the Royal Society of London. Series A* 115 (1927) 700–721.
- [271] W. Kim, Introduction to Object-Oriented Databases, MIT Press, 1990.
- [272] J. Kim, W.J. Dally, D. Abts, Flattened butterfly: a cost-efficient topology for high-radix networks, in: Proc. 34th Int. Symp. Computer Architecture, 2007, pp. 126–137.
- [273] J. Kim, W.J. Dally, D. Abts, Efficient topologies for large-scale cluster networks, in: Proc. 2010 Optical Fiber Communication Conf. and National Fiber Optic Engineers Conf., 2010, pp. 1–3.
- [274] S.T. King, P.M. Chen, Y.-M. Wang, C. Verbowski, H.J. Wang, J.R. Lorch, SubVirt: implementing malware with virtual machines, in: Proc. IEEE Symp. Security and Privacy, 2006, pp. 314–327.
- [275] A. Kleiner, A. Talwalkar, S. Agarwal, I. Stoica, M.I. Jordan, A general bootstrap performance diagnostic, in: Proc. 19th ACM SIGKDD Int. Conf. on Knowledge Discovery and Data Mining, ACM, New York, NY, 2013, pp. 419–427.
- [276] L. Kleinrock, Queuing Systems, vols. I and II, Wiley, New York, NY, 1965.
- [277] D.E. Knuth, The Art of Computer Programming I–III, 2nd edition, Addison–Wesley, Reading, Ma, 1973.
- [278] F. Koeppe, J. Schneider, Do you get what you pay for? Using proof-of-work functions to verify performance assertions in the cloud, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 687–692.
- [279] B. Koley, V. Vusirikala, C. Lam, V. Gill, 100Gb Ethernet and beyond for warehouse scale computing, in: Proc. 15th OptoElectronics and Communications Conf., 2010, pp. 106–107.
- [280] J.G. Koomey, S. Berard, M. Sanchez, H. Wong, Implications of historical trends in the energy efficiency of computing, *IEEE Annals of the History of Computing* 33 (3) (2011) 46–54.
- [281] H. Kopetz, Sparse time versus dense time in distributed real-time systems, in: Proc. 12 Int. Conf. on Distributed Computing Systems, IEEE Computer Society, 1992, pp. 460–467.
- [282] M. Kornacker, A. Behm, V. Bittorf, T. Bobrovitsky, A. Choi, J. Erickson, M. Grund, D. Hecht, M. Jacobs, I. Joshi, L. Kuff, D. Kuma, A. Leblang, N. Li, H. Robinson, D. Rorke, S. Rus, J. Russell, D. Tsirogiannis, S. Wanderman-Milne, M. Yoder, Impala: a modern, open-source SQL engine for Hadoop, in: Proc 7th Biennial Conf. on Innovative Data Systems Research, 2015 (online proceedings).
- [283] G. Koslovski, W.-L. Yeow, C. Westphal, T.T. Huu, J. Montagnat, P. Vicat-Blanc, Reliability support in virtual infrastructures, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 49–58.
- [284] P.R. Krugman, The Self-Organizing Economy, Blackwell Publishers, 1996.
- [285] J.F. Kurose, K.W. Ross, Computer Networking: A Top-down Approach, 6th edition, Addison–Wesley, Reading, Ma, 2013.
- [286] S. Kumar, L. Shi, N. Ahmed, S. Gil, D. Katabi, D. Rus, CarSpeak: a content-centric network for autonomous driving, *ACM SIGCOMM Computer Communication Review* 42 (4) (2012) 259–270.
- [287] D. Kusic, J.O. Kephart, N. Kandasamy, G. Jiang, Power and performance management of virtualized computing environments via lookahead control, in: Proc. 5th Int. Conf. Autonomic Computing, 2008, pp. 3–12.
- [288] A. Kivity, Y. Kamay, D. Laor, U. Lublin, A. Liguori, KVM: the Linux virtual machine monitor, in: Proc. Linux Symposium, Ottawa, 2007, pp. 225–230.
- [289] B.M. Leiner, V.G. Cerf, D.D. Clark, R.E. Khan, L. Kleinrock, D.C. Lynch, J. Postel, L.G. Roberts, S. Wolff, A brief history of the Internet, *ACM SIGCOMM Computer Communication Review* 1 (5) (2009) 22–39.
- [290] C.F. Lam, FTTH look ahead - technologies and architectures, in: Proc. 36th European Conf. Optical Communications, ECOC’10, 2010, pp. 1–18.
- [291] L. Lamport, P.M. Melliar-Smith, Synchronizing clocks in the presence of faults, *Journal of the ACM* 32 (1) (1985) 52–78.

## 610 Literature

- [292] L. Lamport, The part-time Parliament, *ACM Transactions on Computer Systems* 2 (1998) 133–169.
- [293] L. Lamport, Paxos made simple, *ACM SIGACT News* 32 (4) (2001) 51–58.
- [294] L. Lamport, Turing Lecture - the computer science of concurrency: the early years, *Communications of the ACM* 58 (6) (2015) 71–77.
- [295] B.W. Lampson, H.E. Sturmfis, Reflections on operating system design, *Communications of the ACM* 19 (5) (1976) 251–265.
- [296] P.A. Lascocco, S.D. Smalley, P.A. Muckelbauer, R.C. Taylor, S.J. Turner, J.F. Farrell, The inevitability of failure: the flawed assumption of security in modern computing environments, in: Proc. 21st Conf. on National Information System Security, 1998, pp. 303–314.
- [297] A.M. Law, W.D. Kelton, *Simulation Modeling and Analysis*, Mc Graw-Hill, New York, NY, 1982.
- [298] D. Lea, *Concurrent Programming in Java*, second edition, Addison-Wesley, Reading, Ma, 1999.
- [299] P.J. Leach, P. Levine, B. Douros, J. Hamilton, D. Nelson, B. Stumpf, The architecture of an integrated local area network, *IEEE Transactions on Selected Areas in Communication* 1 (5) (1983) 842–857.
- [300] E. Lee, E-K. Lee, M. Gerla, Vehicular cloud networking: architecture and design principles, *IEEE Communications Magazine* 52 (2) (2014) 142–155.
- [301] E. Le Sueur, G. Heiser, Dynamic voltage and frequency scaling: the laws of diminishing returns, in: Proc. Workshop Power Aware Computing and Systems, 2010, pp. 2–5.
- [302] H. Li, A. Ghodsi, M. Zaharia, S. Shenker, I. Stoica, Tachyon: reliable, memory speed storage for cluster computing frameworks, in: Proc. ACM Sym. Cloud Computing, 2014, pp. 1–15.
- [303] Z. Li, N.-H. Yu, Z. Hao, A novel parallel traffic control mechanism for cloud computing, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 376–382.
- [304] C. Li, A. Raghunathan, N.K. Jha, Secure virtual machine execution under an untrusted management OS, in: Proc. IEEE 3rd Int. Conf. Cloud Computing, 2010, pp. 172–179.
- [305] X. Li, J.B. Dennis, G.R. Gao, W. Lim, H. Wei, C. Yang, R. Pavel, FreshBreeze: a data flow approach for meeting DDDAS challenges, in: Proc. Int. Conf. on Computational Science, ICCS 2015, 2015, pp. 2573–2584.
- [306] H.C. Lim, S. Babu, J.S. Chase, S.S. Parekh, Automated control in cloud computing: challenges and opportunities, in: Proc. First Workshop Automated Control for Data Centers and Clouds, ACM Press, 2009, pp. 13–18.
- [307] N.M. Linke, D. Maslov, M. Roetteler, S. Debnath, C. Figgatt, K.A. Landsman, K. Wright, C. Monroe, Experimental comparison of two quantum computing architectures, *Proceedings of the National Academy of Sciences of the United States of America* 114 (2017) 3305–3310, also arXiv:1702.01852 [quant-ph].
- [308] X. Lin, Y. Lu, J. Deogun, S. Goddard, Real-time divisible load scheduling for cluster computing, in: Proc. 13th IEEE Real-Time and Embedded Technology and Applications Symp., 2007, pp. 303–314.
- [309] C. Lin, D.C. Marinescu, Stochastic high level Petri Nets and applications, *IEEE Transactions on Computers* C-37 (7) (1988) 815–825.
- [310] S. Liu, G. Quan, S. Ren, On-line scheduling of real-time services for cloud computing, in: Proc. 6th World Congress on Services, IEEE, 2010, pp. 459–464.
- [311] D. Lo, L. Cheng, R. Govindaraju, L-A. Barroso, C. Kozyrakis, Towards energy proportionality for large-scale latency-critical workloads, *Proceedings of the ACM SIGARCH Computer Architecture News* 42 (3) (2014) 301–312.
- [312] D. Lo, L. Cheng, R. Govindaraju, P. Ranganathan, Kozyrakis, Heracles: improving resource efficiency at scale, in: Proc. 42nd Annual Int. Symp. Computer Architecture, 2015, pp. 450–462.
- [313] G.K. Lockwood, Quick MPI cluster setup on Amazon EC2, <https://glenenklockwood.blogspot.com/2013/04/quick-mpi-cluster-setup-on-amazon-ec2.html>. (Accessed January 2017).
- [314] N. Loutas, V. Peristeras, T. Bouras, E. Kamateri, D. Zeginis, K. Tarabanis, Towards a reference architecture for semantically interoperable clouds, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 143–150.

- [315] C. Lu, J. Stankovic, G. Tao, S. Son, Feedback control real-time scheduling: framework, modeling and algorithms, *Journal of Real-Time Systems* 23 (1–2) (2002) 85–126.
- [316] W. Lu, J. Jackson, J. Ekanayake, R.S. Barga, N. Araujo, Performing large science experiments on Azure: pitfalls and solutions, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 209–217.
- [317] A. Luckow, S. Jha, Abstractions for loosely-coupled and ensemble-based simulations on Azure, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 550–556.
- [318] F. Lumineau, W. Wang, O. Schilke, Blockchain governance - a new way of organizing collaborations?, *Organization Science* 32 (2) (2020) 500–521.
- [319] J. Luna, N. Suri, M. Iorga, A. Karmel, Leveraging the potential of cloud security service level agreements through standards, *IEEE Cloud Computing* 2 (3) (2015) 32–40.
- [320] W.-Y. Ma, B. Shen, J. Brassil, Content service networks: the architecture and protocols, in: A. Bestavros, M. Rabinovich (Eds.), *Web Caching and Content Delivery*, Elsevier, 2001, pp. 83–101.
- [321] J. Madhavan, A. Halevy, S. Cohen, X. Dong, S.R. Jeffery, D. Ko, C. Yu, Structured data meets the web: a few observations, *IEEE Data Engineering Bulletin* 29 (3) (2006) 19–26.
- [322] D.J. Magenheimer, T.W. Christian, vBlades: optimized paravirtualization for the Itanium processor family, in: Proc. 3rd VM Research and Technology Workshop, San Jose, Ca, 2004, pp. 73–82.
- [323] S. Majumder, S. Rixner, Comparing Ethernet and Myrinet for MPI communication, in: Proc. 7th Workshop on Languages, Compilers, and Run-Time Support for Scalable Systems, 2004, pp. 1–7.
- [324] N. Malviya, A. Weisberg, S. Madden, M. Stonebraker, Rethinking main memory OLTP recovery, in: Proc. IEEE 30th Int. Conf. on Data Engineering, 2014, pp. 604–615.
- [325] D.C. Marinescu, *Internet-Based Workflow Management*, Wiley, New York, NY, 2002.
- [326] D.C. Marinescu, G.M. Marinescu, *Approaching Quantum Computing*, Prentice Hall, Upper Saddle River, NJ, 2004.
- [327] D.C. Marinescu, H.J. Siegel, J.P. Morrison, Options and commodity markets for computing resources, in: R. Buyya, K. Bubendorf (Eds.), *Market Oriented Grid and Utility Computing*, Wiley, New York, NY, ISBN 9780470287682, 2009, pp. 89–120.
- [328] D.C. Marinescu, C. Yu, G.M. Marinescu, Scale-free, self-organizing very large sensor networks, *Journal of Parallel and Distributed Computing* 50 (5) (2010) 612–622.
- [329] D.C. Marinescu, G.M. Marinescu, *Classical and Quantum Information*, Academic Press, Amsterdam, 2012.
- [330] D.C. Marinescu, A. Paya, J.P. Morrison, P. Healy, Distributed hierarchical control versus an economic model for cloud resource management, <http://arXiv.org/pdf/1503.01061.pdf>, 2015.
- [331] D.C. Marinescu, Cloud energy consumption, in: S. Muguresan, I. Bojanova (Eds.), *Encyclopedia of Cloud Computing*, Wiley, New York, NY, 2016, Chapter 25.
- [332] D.C. Marinescu, *Complex Systems and Clouds: A Self-Organization and Self-Management Perspective*, Morgan Kaufmann, Waltham, MA, 2016.
- [333] D.C. Marinescu, A. Paya, J.P. Morrison, A cloud reservation system for big data applications, *IEEE Transactions on Parallel and Distributed Computing* 28 (3) (2017) 606–618.
- [334] D.C. Marinescu, A. Paya, J.P. Morrison, S. Olariu, An approach for scaling cloud resource management, *Cluster Computing* 20 (1) (2017) 909–924, Springer Verlag, Heidelberg.
- [335] P. Marshall, K. Keahey, T. Freeman, Elastic site: using clouds to elastically extend site resources, in: Proc. IEEE Int. Symp. Cluster Computing and the Grid, 2010, pp. 43–52.
- [336] E. Masanet, A. Shehabi, N. Lei, S. Smith, J. Koomey, Recalibrating global data center energy-use estimates, *Science* 367 (6481) (2020) 984–986.
- [337] L. Mashayekhy, M.M. Nejad, D. Grosu, Cloud federations in the sky: formation game and mechanisms, *IEEE Transactions on Cloud Computing* 3 (1) (2015) 14–27.
- [338] F. Mattern, Virtual time and global states of distributed systems, in: Proc. Int. Workshop Parallel and Distributed Algorithms, Elsevier, New York, 1989, pp. 215–226.

- [339] J.M. May, Parallel I/O for High Performance Computing, Morgan Kaufmann, Waltham, MA, 2000.
- [340] M.W. Mayer, Architecting principles for system of systems, *Systems Engineering* 1 (4) (1998) 267–274.
- [341] S. McCartney, ENIAC; the Triumphs and Tragedies of the World's First Computer, Walker and Company Publishing House, New York, NY, 1999.
- [342] W. McCulloch, W. Pitts, A logical calculus of ideas immanent in nervous activity, *Bulletin of Mathematical Biophysics* 5 (4) (1943) 115–133.
- [343] P. McKenney, On the efficient implementation of fair queuing, *Internetworking: Research and Experience* 2 (1991) 113–131.
- [344] P. Mell, What is special about cloud security?, *IT Professional* 14 (4) (2012) 6–8, <http://doi.ieeecomputersociety.org/10.1109/MITP.2012.84>. (Accessed August 2015).
- [345] A. Menon, J.R. Santos, Y. Turner, G.J. Janakiraman, W. Zwaenepoel, Diagnosing performance overheads in Xen virtual machine environments, in: Proc. 1st ACM/USENIX Conf. Virtual Execution Environments, 2005.
- [346] A. Menon, A.L. Cox, W. Zwaenepoel, Optimizing network virtualization in Xen, in: Proc. USENIX Annual Technical Conf., 2006, pp. 15–28.
- [347] A.P. Miettinen, J.K. Miettinen, Energy efficiency of mobile clients in cloud computing, in: Proc. 2nd USENIX Conf. on Hot Topics in Cloud Computing, 2010, pp. 4–11.
- [348] R.A. Milner, *A Calculus of Communicating Systems*, Lecture Notes in Computer Science, vol. 92, Springer-Verlag, Heidelberg, 1980.
- [349] R.A. Milner, Lectures on a calculus for communicating systems, in: Proc. Seminar on Concurrency, in: Lecture Notes in Computer Science, vol. 197, Springer-Verlag, Heidelberg, 1984, pp. 197–220.
- [350] M. Miranda, When every atom counts, *IEEE Spectrum* 49 (7) (2012) 32–37.
- [351] J. Mitola, G.Q. Maguire, Cognitive radio: making software radios more personal, *IEEE Personal Communications* 6 (1999) 13–18.
- [352] J. Mitola, Cognitive radio: an integrated agent architecture for software defined radio, Ph.D. Thesis, KTH, Stockholm, 2000.
- [353] M. Mitzenmacher, The power of two choices in randomized load balancing, Ph.D. Dissertation, Computer Science Department, University of California at Berkeley, 1996.
- [354] M. Mitzenmacher, A.W. Richa, R. Sitaraman, The power of two random choices: a survey of techniques and results, in: S. Rajasekaran, P.M. Pardalos, J.H. Reif, J. Rolim (Eds.), *Handbook of Randomized Computing*, Kluwer Academic Publishers, 2001, pp. 255–312.
- [355] M. Mitzenmacher, The power of two choices in randomized load balancing, *IEEE Transactions on Parallel and Distributed Systems* 12 (10) (2001) 1094–1104.
- [356] T. Miyamoto, M. Hayashi, K. Nishimura, Sustainable network resource management system for virtual private clouds, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 512–520.
- [357] A. Mondal, S.K. Madria, M. Kitsuregawa, Abide: a bid-based economic incentive model for enticing non-cooperative peers in mobile P2P networks, in: Proc. 12th Int. Conf. Database Systems for Advanced Applications, 2007, pp. 703–714.
- [358] J.H. Morris, M. Satyanarayanan, M.H. Conner, M.H. Howard, D.S. Rosenthal, F.D. Smith, Andrew: a distributed personal computing environment, *Communications of the ACM* 29 (3) (1986) 184–201.
- [359] R.J.T. Morris, B.J. Truskowski, The evolution of storage systems, *IBM Systems Journal* 42 (2) (2003) 205–217.
- [360] J. Nagle, On packet switches with infinite storage, *IEEE Transactions on Communications* 35 (4) (1987) 435–438.
- [361] G. Neiger, A. Santoni, F. Leung, D. Rodgers, R. Uhlig, Intel virtualization technology: hardware support for efficient processor virtualization, *Intel Technology Journal* 10 (3) (2006) 167–177.
- [362] M. Nelson, Virtual memory for the Sprite operating system, Technical Report UCB/CSD 86/301, Computer Science Division (EECS), University of California, Berkeley, 1986.

- [363] M.N. Nelson, B.B. Welch, J.K. Osterhout, Caching in Sprite network file systems, ACM Transactions on Computer Systems 6 (1) (1988) 134–154.
- [364] A.J. Nicholson, S. Wolchok, B.D. Noble, Juggler: virtual networks for fun and profit, IEEE Transactions on Mobile Computing 9 (1) (2010) 31–43.
- [365] H. Nissenbaum, Can trust be secured online? A theoretical perspective, Etica e Politica I (2) (1999), 24 pp., Edizione Universita di Trieste, <http://hdl.handle.net/10077/5544>.
- [366] NIST–Reference Architecture Analysis Team, Cloud computing reference architecture - Strawman model V2, Document NIST CCRATWG 019, 2011, 28 pp., <http://www.ogf.org/pipermail/occi-wg/attachments/20110303/e63dee43/attachment-0001.pdf>. (Accessed February 2017).
- [367] Y. Nuevo, Cellular phones as embedded systems, in: Digest of Technical Papers, IEEE Solid-State Circuits Conference, 2004, pp. 32–37.
- [368] D. Nurmi, R. Wolski, C. Grzegorczyk, G. Obertelli, S. Soman, L. Youseff, D. Zagorodnov, The Eucalyptus open-source cloud-computing system, in: Proc. 9th IEEE/ACM Int Symp. Cluster Computing and the Grid, 2009, pp. 124–131.
- [369] S. Oikawa, R. Rajkumar, Portable RK: a portable resource kernel for guaranteed and enforced timing behavior, in: Proc. IEEE Real Time Technology and Applications Symp., June 1999, pp. 111–120.
- [370] T. Okuda, E. Kawai, S. Yamaguchi, A mechanism of flexible memory exchange in cloud computing environments, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 75–80.
- [371] S. Olariu, T. Hristov, G. Yan, The next paradigm shift: from vehicular networks to vehicular clouds, in: S. Basagni, et al. (Eds.), Mobile Ad Hoc Networking Cutting Edge Directions, second edition, Wiley and Sons, N.Y., 2013, pp. 645–700.
- [372] S. Olariu, R. Florin, Vehicular cloud research: what is missing?, in: Proc. 7th ACM Int. Symp. on Design and Analysis of Intelligent Vehicular Networks and Applications, DiVANET’2017, Nov. 2017.
- [373] S. Olariu, A survey of vehicular cloud research: trends, applications, and challenges, IEEE Transactions on Intelligent Transportation Systems 21 (6) (2020) 2648–2663.
- [374] D. Olmedilla, Security and privacy on the semantic web, in: M. Petkovic, W. Jonker (Eds.), Security, Privacy and Trust in Modern Data Management, Springer-Verlag, Heidelberg, 2006.
- [375] M. O'Neill, SaaS, PaaS, and IaaS: a security checklist for cloud models, <http://www.csoneonline.com/article/660065/saas-paas-and-iaas-a-security-checklist-for-cloud-models>. (Accessed August 2015).
- [376] OpenVZ, <http://wiki.openvz.org>. (Accessed August 2015).
- [377] A.M. Oprescu, T. Kielmann, Bag-of-tasks scheduling under budget constraints, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 351–359.
- [378] Oracle Corporation, Lustre file system, [http://en.wikipedia.org/wiki/Lustre\\_\(file\\_system\)](http://en.wikipedia.org/wiki/Lustre_(file_system)), 2010. (Accessed February 2017).
- [379] Oracle Corporation, Oracle NoSQL Database, <http://www.oracle.com/technetwork/database/nosqldb/learnmore/nosql-database-498041.pdf>, 2011. (Accessed February 2017).
- [380] OSA, SP-011: cloud computing pattern, <http://www.opensecurityarchitecture.org/cms/library/pattern-landscape/251-pattern-cloud-computing>. (Accessed February 2017).
- [381] D.L. Osisek, K.M. Jackson, P.H. Gum, ESA/390 interpretive-execution architecture, foundation for VM/ESA, IBM Systems Journal 30 (1) (1991) 34–51.
- [382] K. Ousterhout, P. Wendell, M. Zaharia, I. Stoica, Sparrow: distributed, low latency scheduling, in: Proc. 24th ACM Symp. on Operating Systems Principles, 2013, pp. 69–84.
- [383] N. Oza, K. Karppinen, R. Savola, User experience and security in the cloud - an empirical study in the Finnish Cloud Consortium, in: Proc. IEEE 2nd Int. Conf. Cloud Computing Technology and Science, 2010, pp. 621–628.
- [384] G. Pacifici, M. Spreitzer, A.N. Tantawi, A. Youssef, Performance management for cluster-based web services, IEEE Journal on Selected Areas in Communications 23 (12) (2005) 2333–2343.

- [385] P. Padala, X. Zhu, Z. Wang, S. Singhal, K.G. Shin, Performance evaluation of virtualization technologies for server consolidation, HP Technical Report HPL-2007-59, 2007, also <http://www.hpl.hp.com/techreports/2007/HPL-2007-59R1.pdf>. (Accessed August 2015).
- [386] P. Paillier, Public-key cryptosystems based on composite degree residuosity classes, in: Advances in Cryptology, Springer-Verlag, Heidelberg, 1999, pp. 223–238.
- [387] V. Pankratius, F. Lind, A. Coster, P. Erickson, J. Semeter, Space weather monitoring using multicore mobile devices, American Geographic Union (AGU) Fall Meeting Abstracts, <http://adsabs.harvard.edu/abs/2013AGUFMSA31B..06P>, also <https://mahali.mit.edu/sites/default/files/documents/Mahali-Overview.pdf>. (Accessed November 2016).
- [388] M. Paolino, A. Rigo, A. Spyridakis, J. Fanguède, P. Lalov, D. Raho, T-KVM: a trusted architecture for KVM ARM v7 and v8 virtual machines securing virtual machines by means of KVM, TrustZone, TEE, and SELinux, in: Proc. 6th Int. Conf. on Cloud Computing, GRIDs, and Virtualization, IARIA, Nice, France, 2015, pp. 39–45.
- [389] D.L. Parnas, On the criteria to be used in decomposing systems into modules, Communications of the ACM 15 (12) (1972) 1053–1058.
- [390] S. Parvin, S. Han, L. Gao, F. Hussain, E. Chang, Towards trust establishment for spectrum selection in cognitive radio networks, in: Proc. IEEE 24th Int. Conf. Advanced Information Networking and Applications, 2010, pp. 579–583.
- [391] A.M.K. Pathan, R. Buya, A taxonomy of content delivery networks, <http://cloudbus.org/reports/CDN-Taxonomy.pdf>, 2009. (Accessed August 2015).
- [392] B. Pawłowski, C. Juszezak, P. Staubach, C. Smith, D. Label, D. Hitz, NFS Version 3 design and implementation, in: Proc. Summer 1994 Usenix Technical Conference, 1994, pp. 137–151.
- [393] B. Pawłowski, S. Shepler, C. Beame, B. Callaghan, M. Eisler, D. Noveck, D. Robinson, R. Turlow, The NFS Version 4 protocol, in: Proc. 2nd Int. SANE Conf. System Administration and Network Engineering, 2000.
- [394] A. Paya, D.C. Marinescu, A cloud service for adaptive digital music streaming, in: Proc. 8th Int. Conf. Signal Image Technology and Internet Systems, 2012.
- [395] A. Paya, D.C. Marinescu, Energy-aware load balancing and application scaling for the cloud ecosystem, IEEE Transactions on Cloud Computing 5 (1) (2017) 15–27.
- [396] S. Pearson, A. Benameri, Privacy, security, and trust issues arising from cloud computing, in: Proc. Cloud Computing and Science, 2010, pp. 693–702.
- [397] M. Perrin, Distributed Systems: Concurrency and Consistency, Elsevier, Oxford, UK, 2017.
- [398] C.A. Petri, Kommunikation mit Automaten, Schriften des Rheinisch-Westfälisches Institutes für Instrumentelle Mathematik, vol. 2, 1962, Bonn.
- [399] C.A. Petri, Concurrency Theory, Lecture Notes in Computer Science, vol. 254, Springer-Verlag, Heidelberg, 1987, pp. 4–24.
- [400] A. Pnueli, The temporal logic of programs, in: Proc. 18th Annual IEEE Symp. Foundations of Computer Science, 1977, pp. 46–57.
- [401] R.A. Popa, C.M.S. Redfield, N. Zeldovich, H. Balakrishnan, Cryptdb: protecting confidentiality with encrypted query processing, in: Proc. 23 ACM Symp. on Operating Systems Principles, 2011, pp. 85–100.
- [402] G.J. Popek, R.P. Golberg, Formal requirements for virtualizable third generation architecture, Communications of the ACM 17 (7) (1974) 412–421.
- [403] D. Price, A. Tucker, Solaris Zones: operating systems support for consolidating commercial workloads, in: Proc. 18th Large Installation System Administration, USENIX, 2004, pp. 241–254.
- [404] M. Price, The paradox of security in virtual environments, Computer 41 (11) (2008) 22–28.
- [405] X. Pu, L. Liu, Y. Mei, S. Sivathanu, Y. Koh, C. Pu, Understanding performance interference of I/O workload in virtualized cloud environments, in: Proc. 3rd IEEE Int. Conf. Cloud Computing, 2010, pp. 51–58.
- [406] P. Radzikowski, SAN vs DAS: a cost analysis of storage in the enterprise (updated 2010), <http://capitalhead.com/articles/san-vs-das-a-cost-analysis-of-storage-in-the-enterprise.aspx>. (Accessed February 2017).

- [407] F.Y. Rashid, The dirty dozen: 12 cloud security threats, Infoworld, <https://www.computerworld.com/article/3043506/the-dirty-dozen-12-cloud-security-threats.html>, October, 2021.
- [408] V.J. Reddi, H. Yoon, A. Knies, Two billion devices and counting, IEEE MICRO 38 (38) (2018) 6–21.
- [409] T.K. Refaat, B. Kantarci, H.T. Mouftah, Virtual machine migration and management for vehicular clouds, Vehicular Communications 4 (2016) 47–56.
- [410] N. Regola, J.-C. Ducom, Recommendations for virtualization technologies in high performance computing, in: Proc. 2nd IEEE Int. Conf. Cloud Computing Technology and Science, 2010, pp. 409–416.
- [411] C. Reiss, J. Wilkes, J.L. Hellerstein, Google cluster-usage traces: format+schema, Technical report, Google, Mountain View, CA, 2011, <https://github.com/google/clusterdata>.
- [412] C. Reiss, A. Tumanov, G. Ganger, R. Katz, M. Kozuch, Heterogeneity and dynamicity of clouds at scale: Google trace analysis, in: Proc. ACM Symp. Cloud Computing, 2012, Article #7.
- [413] G. Ren, E. Tune, T. Moseley, Y. Shi, S. Rus, R. Hundt, Google-wide profiling: a continuous profiling infrastructure for data centers, IEEE MICRO 30 (4) (2010) 65–79, [http://static.googleusercontent.com/external\\_content/untrusted\\_dlcp/research.google.com/en/us/pubs/archive/36575.pdf](http://static.googleusercontent.com/external_content/untrusted_dlcp/research.google.com/en/us/pubs/archive/36575.pdf). (Accessed August 2016).
- [414] J. Reyes, D.C. Marinescu, E. Mucciolo, Simulation of quantum many-body systems on Amazon cloud, Computer Physics Communications 261 (April 2021) 107750.
- [415] M. Riandato, Jails Free BSD handbook, <http://www.freebsd.org/doc/handbook/jails.html>. (Accessed January 2017).
- [416] D.M. Ritchie, K. Thompson, The Unix time-sharing system, Communications of the ACM 17 (7) (1974) 365–375.
- [417] D.M. Ritchie, The evolution of the Unix time-sharing system, Bell Labs Technical Journal 63 (2.2) (1984) 1577–1593.
- [418] R. Rivest, A. Shamir, L. Adleman, A method for obtaining digital signatures and public-key cryptosystems, Communications of the ACM 120 (1978) 126.
- [419] A.A. Rocha, T. Salonidis, T. He, D. Towsley, sLRFU: a data streaming based least recently frequently used caching policy, <https://pdfs.semanticscholar.org/ea8d/df7b03109e18633c0b94a09a3dce03b18059.pdf>, 2015. (Accessed March 2017).
- [420] R. Rodrigues, P. Druschel, Peer-to-peer systems, Communications of the ACM 53 (10) (2010) 72–82.
- [421] J. Rolia, L. Cerkasova, M. Arlit, A. Andrzejak, A capacity management service for resource pools, in: Proc. 5th Int. Workshop on Software and Performance, ACM, 2005, pp. 229–237.
- [422] F. Rosenblatt, The perceptron: a probabilistic model for information storage and organization in the brain, Psychological Review 65 (6) (1958) 386–408.
- [423] M. Rosenblum, T. Garfinkel, Virtual machine monitors: current technology and future trends, Computer 38 (5) (2005) 39–47.
- [424] D.M. Rousseau, S.B. Sitkin, R.S. Burt, C. Camerer, Not so different after all: a cross-disciplinary view of trust, The Academy of Management Review 23 (3) (1998) 393–404.
- [425] D.E. Rumelhart, G.E. Hinton, R.J. Williams, Learning representations by back-propagating errors, Nature 323 (1986) 533–536.
- [426] K. Rzadka, et al., Autopilot: workload autoscaling at Google, in: Proc. EuroSys20, 2020, pp. 1–16.
- [427] P. Sadalage, M. Fowler, NoSQL Distilled; a Brief Guide to the Emerging World of Polyglot Persistence, Addison-Wesley, 2012.
- [428] H.F.-W. Sadrozinski, J. Wu, Applications of Field-Programmable Gate Arrays in Scientific Research, Taylor and Francis Inc., Bristol, PA, USA, 2010.
- [429] A. Salomaa, Public-Key Cryptography, Springer-Verlag, Heidelberg, 1990.
- [430] J.H. Saltzer, M.F. Kaashoek, Principles of Computer System Design, Morgan Kaufmann, Waltham, MA, 2009.
- [431] N. Samaan, A novel economic sharing model in a federation of selfish cloud providers, IEEE Transactions on Parallel and Distributed Systems 25 (1) (2014) 12–21.

- [432] R.R. Sambasivan, A.X. Zheng, M. De Rosa, E. Krevat, S. Whitman, M. Stroucken, W. Wang, L. Xy, G.R. Ganger, Diagnosing performance changes by comparing request flows, in: Proc. 8th USENIX Conf. Networked Systems Design and Implementation, 2011, 14 pp.
- [433] B. Sandberg, D. Goldberg, S. Kleiman, D. Walsh, B. Lyon, Design and implementation of the Sun network file system, in: Proc. Summer Usenix, Technical Conference, 1986, pp. 119–130.
- [434] T. Sandholm, K. Lai, Dynamic proportional share scheduling in Hadoop, in: Proc. 15th Workshop Job Scheduling Strategies for Parallel Processing, in: Lecture Notes in Computer Science, vol. 6253, Springer-Verlag, Heidelberg, 2010, pp. 110–131.
- [435] R. Sadhu, Good-enough security; toward a pragmatic business-driven discipline, *IEEE Internet Computing* 7 (1) (2003) 66–68.
- [436] M. Satyanarayanan, A survey of distributed file systems, CS Technical Report, CMU, <http://www.cs.cmu.edu/~satya/docdir/satya89survey.pdf>, 1989. (Accessed August 2015).
- [437] M. Satyanarayanan, P. Bahl, R. Caceres, N. Davies, The case for VM-based cloudlets in mobile computing, *IEEE Transactions on Pervasive Computing* 8 (4) (2009) 14–23.
- [438] M. Satyanarayanan, Mobile computing: the next decade, in: Proc. 1st ACM Workshop on Mobile Cloud Computing & Services: Social Networks and Beyond, 2010, pp. 1–5.
- [439] J. Savage, *Models of Computation: Exploring the Power of Computing*, Addison-Wesley, Reading, Ma, 1998.
- [440] F. Schmuck, R. Haskin, GFPS: a shared-disk file system for large computing clusters, in: Proc. Conf. File and Storage Technologies, USENIX, 2002, pp. 231–244.
- [441] P. Schuster, Nonlinear dynamics from Physics to Biology. Self-organization: an old paradigm revisited, *Complexity* 12 (4) (2007) 9–11.
- [442] M. Schwarzkopf, A. Konwinski, M. Abd-El-Malek, J. Wilkes, Omega: flexible, scalable schedulers for large compute clusters, in: Proc. 8th ACM European Conf. on Computer Systems, 2013, pp. 351–364.
- [443] S. Scott, D. Abts, J. Kim, W.J. Dally, The Blackwidow highradix Clos network, in: Proc. 33rd Annual Int. Symp. on Computer Architecture, IEEE, 2006, pp. 16–28.
- [444] D. Sehr, R. Muth, C. Biffle, V. Khimenko, E. Pasko, K. Schimpf, B. Yee, B. Chen, Adapting software fault isolation to contemporary CPU architectures, in: Proc. 19th USENIX Security Symposium, 2010, pp. 1–11.
- [445] P. Sempolinski, D. Thain, A comparison and critique of Eucalyptus, OpenNebula and Nimbus, in: Proc. 2nd IEEE Int. Conf. Cloud Computing Technology and Science, 2010, pp. 417–426.
- [446] J. Shneidman, C. Ng, D.C. Parkes, A. AuYoung, A.C. Snoeren, A. Vahdat, B. Chun, Why markets could (but don't currently) solve resource allocation problems in systems, in: Proc. 10th Worshop on Hot Topics in Operating Systems, 2005, pp. 7–14.
- [447] J. Shute, R. Vingralek, B. Samwel, B. Handy, C. Whipkey, E. Rollins, M. Oancea, K. Littlefield, D. Menestrina, S. Ellner, J. Cieslewicz, I. Rae, T. Stancescu, H. Apte, F1: a distributed SQL database that scales, *Proceedings of the VLDB Endowment* 6 (11) (2013) 1068–1079.
- [448] H.A. Simon, *Administrative Behavior*, Macmillan, New York, NY, 1947.
- [449] S. Sivathanu, L. Liu, M. Yiduo, X. Pu, Storage management in virtualized cloud environment, in: Proc. 3rd IEEE Int. Conf. Cloud Computing, 2010, pp. 204–211.
- [450] J.E. Smith, R. Nair, The architecture of virtual machines, *Computer* 38 (5) (2005) 32–38.
- [451] L. Snyder, Type architectures, shared memory, and the corollary of modest potential, *Annual Review of Computer Science* 1 (1986) 289–317.
- [452] B. Snyder, Server virtualization has stalled, despite the hype, <http://www.infoworld.com/article/2624771/server-virtualization-has-stalled-despite-the-hype.html>, 2010. (Accessed February 2017).
- [453] I. Sommerville, D. Cliff, R. Calinescu, J. Keen, T. Kelly, M. Kwiatowska, J. McDermid, R. Paige, Large-scale IT complex systems, *Communications of the ACM* 55 (7) (2012) 71–77.
- [454] M. Stecca, M. Maresca, An architecture for a mashup container in virtualized environments, in: Proc. 3rd IEEE nt. Conf. Cloud Computing, 2010, pp. 386–393.

- [455] R. Stoica, A. Ailamaki, Enabling efficient OS paging for main-memory OLTP databases, in: Proc. 9th Int. Workshop on Data Management on New Hardware, 2013, Article #6.
- [456] M. Stokely, J. Winget, E. Keyes, C. Grimes, B. Yolken, Using a market economy to provision compute resources across planet-wide clusters, in: Proc. IEEE Int. Symp. on Parallel and Distributed Processing, 2009, pp. 1–8.
- [457] I. Stoica, R. Morris, D. Karger, M.F. Kaashoek, H. Balakrishnan, Chord: a scalable peer-to-peer lookup service for Internet applications, in: Proc. ACM/SIGCOMM Conf. on Applications, Technologies, Architectures, and Protocols for Computer Communications, 2001, pp. 149–160.
- [458] M. Stonebreaker, The “NoSQL” has nothing to do with SQL, <http://cacm.acm.org/blogs/blog-cacm/50678-the-nosql-discussion-has-nothing-to-do-with-sql/fulltext>, 2009. (Accessed February 2017).
- [459] Stratokey, Cloud data protection, <https://www.stratokey.com/solutions/cloud-access-security-brokers?gclid=CM7bp5eOh80CFQ8kgQodYu4L5g>, 2015. (Accessed August 2016).
- [460] StreamingMedia, Only 18% using adaptive streaming, says Skyfire report, <http://www.streamingmedia.com/Articles/ReadArticle.aspx?ArticleID=79393>. (Accessed August 2015).
- [461] J. Stribling, J. Li, I.G. Councill, M.F. Kaashoek, R. Morris, Overcite: a distributed, cooperative citeseer, in: Proc. 3rd Symp. on Networked Systems Design and Implementation, 2006, pp. 69–79.
- [462] J. Sugerman, G. Venkitachalam, B. Lim, Virtualizing I/O devices on VMware Workstation’s hosted virtual machine monitor, in: Proc. USENIX Annual Technical Conference, 2001, pp. 1–14.
- [463] C. Sun, W. Zhang, K.B. Letaief, Cluster-based cooperative spectrum sensing for cognitive radio systems, in: Proc. IEEE Conf. on Communications, 2007, pp. 2511–2515.
- [464] C. Sun, W. Zhang, K.B. Letaief, Cooperative spectrum sensing for cognitive radios under BW constraints, in: Proc. IEEE Wireless Communications and Networking Conference, 2007, pp. 1–5.
- [465] Y. Sun, Z. Han, K.J. Ray Liu, Defense of trust management vulnerabilities in distributed networks, in: Special Issue, Security in Mobile Ad Hoc and Sensor Networks, IEEE Communications Magazine 46 (2) (2008) 112–119.
- [466] V. Sundaram, A. Chandra, P. Goyal, P. Shenoy, J. Sahni, H.M. Vin, Application performance in the QLinux multimedia operating system, in: Proc. 8th ACM Int. Conf. on Multimedia, 2000, pp. 127–136.
- [467] M. Steinder, I. Walley, D. Chess, Server virtualization in autonomic management of heterogeneous workloads, ACM SIGOPS Operating Systems Review 42 (1) (2008) 94–95.
- [468] T. Taleb, A. Ksentini, Follow me cloud: interworking distributed clouds & distributed mobile networks, IEEE Network 27 (5) (2013) 12–19.
- [469] D. Tancock, S. Pearson, A. Charlesworth, A privacy impact assessment tool for cloud computing, in: Proc. 2nd IEEE Int. Conf. Cloud Computing, 2010, pp. 667–674.
- [470] L. Tang, J. Dong, Y. Zhao, L.-J. Zhang, Enterprise cloud service architecture, in: Proc. 3rd IEEE Int. Conf. Cloud Computing, 2010, pp. 27–34.
- [471] J. Tang, Y. Cui, K. Ren, J. Liu, R. Buyya, Ensuring security and privacy preservation for cloud data services, ACM Computing Surveys 49 (1) (2016) 13.
- [472] J. Tate, F. Lucchese, R. Moore, Introduction to Storage Area Networks, IBM Redbooks, 2006, <http://www.redbooks.ibm.com/redbooks/pdfs/sg245470.pdf>. (Accessed August 2015).
- [473] D. Tennenhouse, Layered multiplexing considered harmful, in: H. Rudin, R.C. Williamson (Eds.), Protocols for High-Speed Networks, North Holland, 1989, pp. 143–148.
- [474] G. Tesauro, N.K. Jong, R. Das, M.N. Bennani, A hybrid reinforcement learning approach to autonomic resource allocation, in: Proc. IEEE Int Conf. on Autonomic Computing, 2006, pp. 65–73.
- [475] A. Thusoo, J.S. Sarma, N. Jain, Z. Shao, P. Chakka, S. Anthony, H. Liu, P. Wyckoff, R. Murthy, Hive a warehousing solution over a MapReduce framework, Proceedings of the VLDB Endowment 2 (2) (2009) 1626–1629.
- [476] M. Tirmazi, et al., Borg: the next generation, in: Proc. EuroSys, ACM, 2020, <https://doi.org/10.1145/3342195.3387517>, ISBN 978-1-4503-6882-7/20/04.

- [477] J. Timmermans, V. Ikonen, B.C. Stahl, E. Bozdag, The ethics of cloud computing. A conceptual review, in: Proc. 2nd IEEE Int. Conf. Cloud Computing Technology and Science, 2010, pp. 614–620.
- [478] Top 500 supercomputers, <http://top500.org/featured/top-systems/>. (Accessed January 2016).
- [479] TRIAD, Translating relaying Internet architecture integrating active directories, [https://www.researchgate.net/publication/235184440\\_TRIAD\\_Translating\\_Relying\\_Internetwork\\_Architecture\\_Integrating\\_Active\\_Directories\\_Final\\_Report](https://www.researchgate.net/publication/235184440_TRIAD_Translating_Relying_Internetwork_Architecture_Integrating_Active_Directories_Final_Report). (Accessed October 2021).
- [480] C. Tung, M. Steinder, M. Spreitzer, G. Pacifici, A scalable application placement controller for enterprise data centers, in: Proc. 16th Int. Conf. on WWW, 2007.
- [481] A.M. Turing, On computable numbers, with an application to the Entscheidungsproblem, Proceedings of the London Mathematical Society. Series 2 42 (1937) 230–265, and On computable numbers, with an application to the Entscheidungsproblem: a correction, Proceedings of the London Mathematical Society. Series 2 43 (1937) 544–546.
- [482] A.M. Turing, The chemical basis of morphogenesis, Philosophical Transactions of the Royal Society of London. Series B 237 (1952) 37–72.
- [483] R. Urgaonkar, S. Wang, T. He, M. Zafer, K. Chan, K.K. Leun, Dynamic service migration and workload scheduling in edge-clouds, Performance Evaluation 91 (C) (2015) 205–228.
- [484] USDOT, 2015–2019 strategic plan intelligent transportation systems (ITS), Joint Program Office (JPO) – FHWA-JPO-14-145, <http://www.its.dot.gov/strategicplan.pdf>, 2015.
- [485] L.G. Valiant, A bridging model for parallel computation, Communications of the ACM 33 (8) (1990) 103–112.
- [486] L.G. Valiant, A bridging model for multicore computing, in: Proc. 16th Annual European Symp. on Algorithms, in: Lecture Notes on Computer Science, vol. 5193, 2008, pp. 13–28.
- [487] J. Varia, Cloud architectures, <https://aws.amazon.com/articles/building-grepttheweb-in-the-cloud-part-1-cloud-architectures/>.
- [488] J. van Vliet, F. Paganelli, S. van Wel, D. Dowd, Elastic Beanstalk: Simple Cloud Scaling for Java Developers, O'Reilly Publishers, Sebastopol, California, 2011.
- [489] L.M. Vaquero, L. Rodero-Merino, R. Buyya, Dynamically scaling applications in the cloud, ACM SIGCOMM Computer Communication Review 41 (1) (2011) 45–52.
- [490] H.N. Van, F.D. Tran, J.-M. Menaud, Performance and power management for cloud infrastructures, in: Proc. IEEE Conf. Cloud Computing, 2010, pp. 329–336.
- [491] K. Varadhan, R. Govindan, D. Estrin, Persistent route oscillations in interdomain routing, Computer Networks 32 (1) (2000) 1–16.
- [492] S. Venkataraman, A. Panda, G. Ananthanarayanan, M.J. Franklin, I. Stoica, The power of choice in data-aware cluster scheduling, in: Proc. 11th USENIX Symp. Operating Systems Design and Implementation, 2014, pp. 301–314.
- [493] P. Veríssimo, L. Rodrigues, Aposteriori agreement for fault-tolerant clock synchronization on broadcast networks, in: Proc. 22nd Annual Int. Symp. on Fault-Tolerant Computing, IEEE Press, Los Alamitos, CA, 1992, pp. 527–536.
- [494] A. Verma, G. Dasgupta, T.K. Nayak, P. De, R. Kothari, Server workload analysis for power minimization using consolidation, in: Proc. USENIX Annual Technical Conference, 2009, p. 28.
- [495] A. Verma, L. Pedrosaz, M. Korupolu, D. Oppenheimer, E. Tune, J. Wilkes, Large-scale cluster management at Google with Borg, in: Proc. 10th European Conference on Computer Systems, 2015, Article No. 18.
- [496] VMware, VMware vSphere storage appliance, <https://www.vmware.com/files/pdf/techpaper/VM-vSphere-Storage-Appliance-Deep-Dive-WP.pdf>. (Accessed August 2015).
- [497] J. von Neumann, Probabilistic logic and synthesis of reliable organisms from unreliable components, in: C.E. Shannon, J. McCarthy (Eds.), Automata Studies, Princeton University Press, Princeton, NJ, 1956.
- [498] J. von Neumann, Fourth University of Illinois Lecture, in: A.W. Burks (Ed.), Theory of Self-Reproducing Automata, University of Illinois Press, Champaign, IL, 1966.

- [499] S.V. Vrbsky, M. Lei, K. Smith, J. Byrd, Data replication and power consumption in data grids, in: Proc. 2nd IEEE Int. Conf. Cloud Computing Technology and Science, 2010, pp. 288–295.
- [500] B. Walker, G. Popek, E. English, C. Kline, G. Thiel, The LOCUS distributed operating system, in: Proc. 9th ACM Symp. Operating Systems Principles, 1983, pp. 49–70.
- [501] M.E. Wall, A. Rechtsteiner, L.M. Rocha, Singular value decomposition and principal component analysis, in: D.P. Berrar, W. Dubitzky, M. Granzow (Eds.), *A Practical Approach to Microarray Data Analysis*, Kluwer, Norwell, MA, 2003.
- [502] K. Walsh, E.G. Sirer, Experience with an object reputation system for peer-to-peer file sharing, in: Proc. 3rd Symp. Networked Systems Design and Implementation, 2006, pp. 1–14.
- [503] L. Wang, L. Park, R. Pang, V.S. Pai, L. Peterson, Reliability and security in the CoDeeN content distribution network, in: Proc. USENIX Annual Technical Conference, 2004, 14 pp.
- [504] M. Wang, N. Kandasamy, A. Guez, M. Kam, Adaptive performance control of computing systems via distributed cooperative control: application to power management in computer clusters, in: Proc. 3rd IEEE Intl. Conf. on Autonomic Computing, 2006, pp. 165–174.
- [505] Y. Wang, I-R. Chen, D-C. Wang, A survey of mobile cloud computing applications: perspectives and challenges, *Wireless Personal Communications* 80 (4) (2015) 1607–1623.
- [506] S. Wang, R. Urgaonkar, M. Zafer, T. He, K. Chan, K.K. Leun, Dynamic service migration in edge-clouds, in: Proc. IFIP Networking Conf., 2015.
- [507] D.J. Watts, S.H. Strogatz, Collective-dynamics of small-world networks, *Nature* 393 (1998) 440–442.
- [508] J. Webster, Evaluating IBM's SVC and TPC for server virtualization, [ftp://ftp.boulder.ibm.com/software/at/tivoli/analyst\\_paper\\_ibm\\_svc\\_tpc.pdf](ftp://ftp.boulder.ibm.com/software/at/tivoli/analyst_paper_ibm_svc_tpc.pdf). (Accessed August 2016).
- [509] G. Weikum, G. Vossen, *Transactional Information Systems: Theory, Algorithms, and the Practice of Concurrency Control and Recovery*, Morgan Kaufmann, Waltham, MA, 2001.
- [510] J. Wilkes, Google cluster-usage traces v3, Technical report, Google, Mountain View, CA, 2019, <https://github.com/google/cluster-data>.
- [511] M. Whaiduzzaman, M. Sookhak, A. Gani, R. Buyya, A survey on vehicular cloud computing, *Journal of Network and Computer Applications* 40 (2014) 325–344.
- [512] S.E. Whang, H. Garcia-Molina, Managing information leakage, in: Proc. 5th Biennal Conf. on Innovative Data Systems Research, 2011, also <http://ilpubs.stanford.edu:8090/987/>. (Accessed August 2015).
- [513] A. Williams, *C++ Concurrency in Action: Practical Multithreading*, Manning Publications, Shelter Island, NY, 2012.
- [514] A. Whitaker, M. Shaw, S.D. Gribble, Denali; lightweight virtual machines for distributed and networked applications, Technical Report 02-0201, University of Washington, 2002.
- [515] V. Winkler, *Securing the Cloud: Cloud Computer Security Techniques and Tactics*, Elsevier Science and Technologies Books, 2011.
- [516] J.A. Winter, D.H. Albonesi, C.A. Shoemaker, Scalable thread scheduling and global power management for heterogeneous many-core architectures, in: Proc. 19th Int. Conf. Parallel Architectures and Compilation Techniques, 2010, pp. 29–40.
- [517] E.C. Withana, B. Plale, Usage patterns to provision for scientific experimentation in clouds, in: Proc. 2nd IEEE Int. Conf. Cloud Computing Technology and Science, 2010, pp. 226–233.
- [518] S.A. Wolf, A.Y. Chtchelkanova, D.M. Treger, Spintronics - a retrospective and perspective, *IBM Journal of Research and Development* 50 (1) (2006) 101–110.
- [519] Xen Wiki, [https://wiki.xenproject.org/wiki/Main\\_Page](https://wiki.xenproject.org/wiki/Main_Page), 2007.
- [520] Z. Xiao, D. Cao, A policy-based framework for automated SLA negotiation for Internet-based virtual computing environment, in: Proc. 16th IEEE Int. Conf. Parallel and Distributed Systems, 2010, pp. 694–699.
- [521] R.S. Xin, J. Rosen, M. Zaharia, M.J. Franklin, S. Shenker, I. Stoica, Shark: SQL and rich analytics at scale, in: ACM SIGMOD Int. Conf. on Management of Data, 2013, pp. 13–24.

- [522] G. Xylomenos, C.N. Ververidis, V.A. Siris, N. Fotiou, C. Tsilopoulos, X. Vasilakos, K.V. Katsaros, G.C. Polyzos, A survey of information-centric networking research, *IEEE Communications Surveys and Tutorials* 16 (2) (2014) 1024–1049.
- [523] G. Yan, D. Wen, S. Olariu, M.C. Weigle, Security challenges in vehicular cloud computing, *IEEE Transactions on Intelligent Transportation Systems* 4 (1) (2013) 6–16.
- [524] G. Yan, S. Olariu, J. Wang, S. Arif, Towards providing scalable and robust privacy in vehicular networks, *IEEE Transactions on Parallel and Distributed Systems* 25 (7) (2014) 1896–1906.
- [525] A.C. Yao, Some complexity questions related to distributed computing, in: Proc. 11th Symp. on the Theory of Computing, 1979, pp. 209–213.
- [526] A.C. Yao, How to generate and exchange secrets, in: Proc. 27th Annual Symp. on Foundations of Computer Science, 1986, pp. 162–167.
- [527] A. Yasin, A top-down method for performance analysis and counters architecture, in: Proc. IEEE Int. Symp. on Perf. Analysis Systems and Software, 2014, pp. 1–10.
- [528] A. Yasin, Y. Ben-Asher, A. Mendelson, Deep-dive analysis of the data analytics workload in CloudSuite, in: Proc. IEEE Int. Workshop/Symp. on Workload Characterization, 2014, pp. 1–10, Paper 67.
- [529] H. Yu, X. Bai, D.C. Marinescu, Workflow management and resource discovery for an intelligent grid, *Parallel Computing* 31 (7) (2005) 797–811.
- [530] Y. Yu, M. Isard, D. Fetterly, M. Budiu, U. Erlingsson, P. Kumar, G.J. Currey, DryadLINQ: a system for general-purpose distributed data-parallel computing using a high-level language, in: Proc. 8th USENIX Symp. Operating System Design and Implementation, 2009, pp. 1–14.
- [531] M. Zapf, A. Heinzl, Evaluation of process design patterns: an experimental study, in: W.M.P. van der Aalst, J. Desel, A. Oberweis (Eds.), Business Process Management, in: Lecture Notes on Computer Science, vol. 1806, Springer-Verlag, Heidelberg, 2000, pp. 83–98.
- [532] M. Zaharia, D. Borthakur, J.S. Sarma, K. Elmeleegy, S. Shenker, I. Stoica, Delay scheduling: a simple technique for achieving locality and fairness in cluster scheduling, in: Proc. 5th European Conf. on Computer Systems, 2010, pp. 265–278.
- [533] M. Zaharia, M. Chowdhury, T. Das, A. Dave, J. Ma, M. McCauley, M.J. Franklin, S. Shenker, I. Stoica, Resilient distributed datasets: a fault-tolerant abstraction for in-memory cluster computing, in: Proc. 9th USENIX Conf. on Networked Systems Design and Implementation, 2012, pp. 2–16.
- [534] M. Zaharia, T. Das, H. Li, S. Shenker, I. Stoica, Discretized streams: an efficient and fault-tolerant model for stream processing on large clusters, in: Proc. 4th USENIX Conference on Hot Topics in Cloud Computing, USENIX Association, 2012, pp. 10–16.
- [535] P. Zech, M. Felderer, R. Breu, Towards a model-based security testing approach in cloud computing environments, in: Proc. 6th IEEE Int. Conf. on Software Security and Reliability Companion, 2012, pp. 47–56.
- [536] Z.L. Zhang, D. Towsley, J. Kurose, Statistical analysis of the generalized processor sharing scheduling discipline, *IEEE Journal on Selected Areas in Communications* 13 (6) (1995) 1071–1080.
- [537] X. Zhang, J. Liu, B. Li, T.-S.P. Yum, CoolStreaming/DONet: a data-driven overlay network for peer-to-peer live media streaming, in: Proc. IEEE INFOCOM 2005, 2005, pp. 2102–2111.
- [538] C. Zhang, H.D. Sterck, CloudBATCH: A batch job queuing system on clouds with Hadoop and HBase, in: Proc. 2nd IEEE Int. Conf. Cloud Computing Technology and Science, 2010, pp. 368–375.
- [539] L. Zhang, A. Afanasyev, J. Burke, V. Jacobson, K.C. Claffy, P. Crowley, C. Papadopoulos, L. Wang, B. Zhang, Named data networks, *ACM SIGCOMM Computer Communication Review* 44 (3) (2014) 66–73.
- [540] T. Zhang, R.E. DeGrande, A. Boukerche, Urban traffic characterization for enabling vehicular clouds, in: Proc. IEEE Wireless Communications and Networking Conf., April 2016.
- [541] X. Zhao, K. Borders, A. Prakash, Virtual machine security systems, in: Advances in Computer Science and Engineering, 2011, pp. 339–365.