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RESEARCH INTERESTS

Practice of distributed systems
Theory of distributed computing

EDUCATION

Ph.D. Computer Science, Cornell University, USA, August 2000
M.S. Computer Science, Cornell University, USA, May 1998
B.E. Computer Science, Universidade Estadual de Campinas, Brazil, June 1995

PROFESSIONAL EXPERIENCE

2014–current Senior Staff Engineer and Researcher, VMware Research Group
2008–2014 Senior Researcher, Microsoft Research Silicon Valley
2002–2008 Researcher, Storage Systems Department, HP Laboratories
2000–2002 Researcher, Compaq/HP Systems Research Center
1998, 1999 Intern, IBM T.J. Watson Research Center

SELECTED PROJECTS

A. Practice of distributed systems

1. *Yesquel*. Designed and implemented a new type of distributed SQL database system that scales and performs similarly to NOSQL systems (**SOSP 2015**). The system is open source and available at <https://github.com/mkaguilera/yesquel>
2. *Geo-distributed systems*. Proposed abstractions and concepts to develop distributed systems that span many data centers, including transaction chains (**SOSP 2013**), parallel snapshot isolation (**SOSP 2011**), online migration (**ATC 2011**), and RPC chains (**NSDI 2009**).
3. *Reliable failure detectors*. Proposed mechanisms to realize reliable failure detectors (**NSDI 2013**, **SOSP 2011**, **HotOS 2009**).
4. *Sinfonia*. Designed and implemented lightweight transactions to develop applications in data centers (**SOSP 2007**).
5. *Black-box performance debugging*. Proposed concepts and techniques to debug the performance of complex distributed systems (**SOSP 2003**).

B. Theory of distributed computing

6. *Reconfiguration without consensus*. Proposed algorithms to reconfigure distributed storage without the use of consensus (**JACM 2011**, **PODC 2009**).
7. *Leader election*. Proposed algorithms for electing leaders in distributed systems (**DIST COMP 2008**, **PODC 2004**, **PODC 2003**, **DISC 2001**).
8. *Quality of service of failure detectors*. Proposed metrics and mechanisms to obtain failure detectors with performance guarantees (**IEEE ToC 2002**, **DSN 2000**).

Member of program committee VLDB 2016, ASPLOS 2016
SOSP 2015, HotOS 2015, DISC 2015
DSN 2014, HotDep 2014
DSN 2013, FAST 2013, HotDep 2013
DSN 2012, HotDep 2012, ICDCN 2012, P2P 2012, SSS 2012
DISC 2011, FAST 2011, CloudDB 2011, LADC 2011
SPAA 2011, OPODIS 2011, TADDS 2011
PODC 2010, DISC 2010, DSN 2010, OPODIS 2010
SAN 2010, SSS 2010
DISC 2009, HotDep 2009, ICDCN 2009, LADC 2009
PODC 2009, OPODIS 2009, SSS 2009
OSDI 2008, DSN 2008, ICDCN 2008
HotDep 2007, DSN 2006
PODC 2005, PODC 2003, DISC 2001

REFEREED PUBLICATIONS

A. Practice of distributed systems

1. *Yesquel: Scalable SQL storage for Web applications.*
Marcos K. Aguilera, Joshua B. Leners, Michael Walfish.
ACM Symposium on Operating Systems Principles (**SOSP 2015**), October 2015.
2. *Taming uncertainty in distributed systems with help from the network.*
Joshua B. Leners, Trinabh Gupta, Marcos K. Aguilera, Michael Walfish.
European Conference on Computer Systems (**EuroSys 2015**), April 2015.
3. *Transaction chains: achieving serializability with low latency in geo-distributed storage systems.*
Yang Zhang, Russell Power, Siyuan Zhou, Yair Sovran, Marcos K. Aguilera, Jinyang Li.
ACM Symposium on Operating Systems Principles (**SOSP 2013**), November 2013.
4. *Consistency-based service level agreements for cloud storage.*
Douglas B. Terry, Vijayan Prabhakaran, Ramakrishna Kotla, Mahesh Balakrishnan, Marcos K. Aguilera, Hussam Abu-Libdeh.
ACM Symposium on Operating Systems Principles (**SOSP 2013**), November 2013.
5. *Improving availability in distributed systems with failure informers.*
Joshua B. Leners, Trinabh Gupta, Marcos K. Aguilera, Michael Walfish.
Symposium on Networked Systems Design and Implementation (**NSDI 2013**), April 2013.
6. *Surviving congestion in geo-distributed storage systems.*
Brian Cho, Marcos K. Aguilera.
Usenix Annual Technical Conference (**ATC 2012**), June 2012.
7. *Detecting failures in distributed systems with the Falcon spy network.*
Joshua Leners, Hao Wu, Wei-Lun Hung, Marcos K. Aguilera, Michael Walfish.
ACM Symposium on Operating Systems Principles (**SOSP 2011**), October 2011.
8. *Transactional storage for geo-replicated systems.*
Yair Sovran, Russell Power, Marcos K. Aguilera, Jinyang Li.
ACM Symposium on Operating Systems Principles (**SOSP 2011**), October 2011.
9. *Online migration for geo-distributed storage systems.*
Nguyen Tran, Marcos K. Aguilera, Mahesh Balakrishnan.

- Usenix Annual Technical Conference (**ATC 2011**), June 2011.
10. *Location, location, location!: modeling data proximity in the cloud.*
Birjodh Tiwana, Mahesh Balakrishnan, Marcos K. Aguilera, Hitesh Ballani, Z. Morley Mao.
ACM Workshop on Hot Topics in Networks (**HotNets 2010**), October 2010.
 11. *Sinfonia: a new paradigm for building scalable distributed systems.*
Marcos K. Aguilera, Arif Merchant, Mehul A. Shah, Alistair C. Veitch, Christos T. Karamanolis.
ACM Transactions on Computer Systems (**TOCS**), November 2009.
 12. *No time for asynchrony.*
Marcos K. Aguilera, Michael Walfish.
Usenix Workshop on Hot Topics in Operating Systems (**HotOS 2009**), May 2009.
 13. *RPC chains: efficient client-server communication in geodistributed systems.*
Yee Jiun Song, Marcos K. Aguilera, Ramakrishna Kotla, Dahlia Malkhi.
Usenix Symposium on Networked Systems Design and Implementation (**NSDI 2009**), April 2009.
 14. *A practical scalable distributed B-tree.*
Marcos K. Aguilera, Wojciech Golab, Mehul Shah.
International Conference on Very Large Data Bases (**VLDB 2008**), August 2008.
 15. *Sinfonia: a new paradigm for building scalable distributed systems.*
Marcos K. Aguilera, Arif Merchant, Mehul A. Shah, Alistair C. Veitch, Christos T. Karamanolis.
ACM Symposium on Operating Systems Principles (**SOSP 2007**), October 2007.
 16. *Olive: distributed point-in-time branching storage for real systems.*
Marcos K. Aguilera, Susan Spence, Alistair Veitch.
Usenix Symposium on Networked Systems Design and Implementation (**NSDI 2006**), May 2006.
 17. *WAP5: black-box performance debugging for wide-area systems.*
Patrick Reynolds, Janet Wiener, Jeff Mogul, Marcos K. Aguilera, Amin Vahdat.
International World Wide Web Conference (**WWW 2006**), May 2006.
 18. *Performance debugging for distributed systems of black boxes.*
Marcos K. Aguilera, Jeffrey C. Mogul, Janet Wiener, Athicha Muthitacharoen.
ACM Symposium on Operating Systems Principles (**SOSP 2003**), October 2003.
 19. *Block-level security for network attached disks.*
Marcos K. Aguilera, Minwen Ji, Mark Lillibridge, John MacCormick, Erwin Oertli, Dave Andersen, Mike Burrows, Timothy Mann, Chandramohan Thekkath.
Usenix Conference on File and Storage Technologies (**FAST 2003**), March 2003.

B. Theory of distributed computing

20. *The correctness proof of Ben-Or's randomized consensus algorithm.*
Marcos K. Aguilera, Sam Toueg.
Distributed Computing journal (**DIST COMP**), October 2012.
21. *Partial synchrony based on set timeliness.*
Marcos K. Aguilera, Carole Delporte-Gallet, Hugues Fauconnier, Sam Toueg.
Distributed Computing journal (**DIST COMP**), June 2012.
22. *Dynamic atomic storage without consensus.*
Marcos K. Aguilera, Idit Keidar, Dahlia Malkhi, Alexander Shraer.

- Journal of the ACM (**JACM**), April 2011.
23. *The mailbox problem.*
Marcos K. Aguilera, Eli Gafni, Leslie Lamport.
Distributed Computing journal (**DIST COMP**), October 2010.
 24. *Fast asynchronous consensus with optimal resilience.*
Ittai Abraham, Marcos K. Aguilera, Dahlia Malkhi.
International Symposium on Distributed Computing (**DISC 2010**), September 2010.
 25. *Adaptive progress: a gracefully-degrading liveness property.*
Marcos K. Aguilera, Sam Toueg.
Distributed Computing journal (**DIST COMP**), August 2010.
 26. *Partial synchrony based on set timeliness.*
Marcos K. Aguilera, Carole Delporte-Gallet, Hugues Fauconnier, Sam Toueg.
ACM Symposium on Principles of Distributed Computing (**PODC 2009**), August 2009.
 27. *Dynamic atomic storage without consensus.*
Marcos K. Aguilera, Idit Keidar, Dahlia Malkhi, Alexander Shraer.
ACM Symposium on Principles of Distributed Computing (**PODC 2009**), August 2009.
 28. *Remote storage with Byzantine servers.*
Marcos K. Aguilera, Ram Swaminathan.
ACM Symposium on Parallelism in Algorithms and Architectures (**SPAA 2009**), August 2009.
 29. *On implementing Omega in systems with weak reliability and synchrony assumptions.*
Marcos K. Aguilera, Carole Delporte-Gallet, Hugues Fauconnier, Sam Toueg.
Distributed Computing journal (**DIST COMP**), October 2008.
 30. *The mailbox problem.*
Marcos K. Aguilera, Eli Gafni, Leslie Lamport.
International Symposium on Distributed Computing (**DISC 2008**), September 2008.
 31. *Transaction rate limiters for peer-to-peer systems.*
Marcos K. Aguilera, Mark Lillibridge, Xiaozhou Li.
IEEE International Conference on Peer-to-Peer Computing (**P2P 2008**), September 2008.
 32. *Timeliness-based wait-freedom: a gracefully degrading progress condition.*
Marcos K. Aguilera, Sam Toueg.
ACM Symposium on Principles of Distributed Computing (**PODC 2008**), August 2008.
 33. *Abortable and query-abortable objects and their efficient implementation.*
Marcos K. Aguilera, Svend Frolund, Vassos Hadzilacos, Stephanie Horn, Sam Toueg.
ACM Symposium on Principles of Distributed Computing (**PODC 2007**), August 2007.
 34. *Improving recoverability in multi-tier storage systems.*
Marcos K. Aguilera, Kimberly Keeton, Arif Merchant, Kiran Muniswamy-Reddy, Mustafa Uysal.
IEEE/IFIP International Conference on Dependable Systems and Networks (**DSN 2007**), June 2007.
 35. *Consensus with Byzantine failures and little system synchrony.*
Marcos K. Aguilera, Carole Delporte-Gallet, Hugues Fauconnier, Sam Toueg.
IEEE/IFIP International Conference on Dependable Systems and Networks (**DSN 2006**), June 2006.
 36. *On the erasure recoverability of MDS codes under concurrent updates.*
Marcos K. Aguilera, Ramaprabhu Janakiraman, Lihao Xu.

- IEEE International Symposium on Information Theory (**ISIT 2005**), September 2005.
37. *Using erasure codes efficiently for storage in a distributed system.*
Marcos K. Aguilera, Ramaprabhu Janakiraman, Lihao Xu.
IEEE/IFIP International Conference on Dependable Systems and Networks (**DSN 2005**), June 2005.
 38. *Communication-efficient leader election and consensus with limited link synchrony.*
Marcos K. Aguilera, Carole Delporte-Gallet, Hugues Fauconnier, Sam Toueg.
ACM Symposium on Principles of Distributed Computing (**PODC 2004**), July 2004.
 39. *Uniform solvability with a finite number of MWMM registers.*
Marcos K. Aguilera, Burkhard Englert, Eli Gafni.
International Symposium on Distributed Computing (**DISC 2003**), October 2003.
 40. *On implementing Omega with weak reliability and synchrony assumptions.*
Marcos K. Aguilera, Carole Delporte-Gallet, Hugues Fauconnier, Sam Toueg.
ACM Symposium on Principles of Distributed Computing (**PODC 2003**), July 2003.
 41. *On using network attached disks as shared memory.*
Marcos K. Aguilera, Burkhard Englert, Eli Gafni.
ACM Symposium on Principles of Distributed Computing (**PODC 2003**), July 2003.
 42. *On the impact of fast failure detectors on real-time fault-tolerant systems.*
Marcos K. Aguilera, Gerard Le Lann, Sam Toueg.
International Symposium on Distributed Computing (**DISC 2002**), October 2002.
 43. *On the quality of service of failure detectors.*
Wei Chen, Sam Toueg, Marcos K. Aguilera.
IEEE Transactions on Computers (**IEEE ToC**), May 2002.
 44. *Stable leader election.*
Marcos K. Aguilera, Carole Delporte-Gallet, Hugues Fauconnier, Sam Toueg.
International Symposium on Distributed Computing (**DISC 2001**), October 2001.
 45. *Thrifty generic broadcast.*
Marcos K. Aguilera, Carole Delporte-Gallet, Hugues Fauconnier, Sam Toueg.
International Symposium on Distributed Computing (**DISC 2000**), October 2000.
 46. *Efficient atomic broadcast using deterministic merge.*
Marcos K. Aguilera, Robert E. Strom.
ACM Symposium on Principles of Distributed Computing (**PODC 2000**), July 2000.
 47. *On the quality of service of failure detectors.*
Wei Chen, Sam Toueg, Marcos K. Aguilera.
IEEE/IFIP International Conference on Dependable Systems and Networks (**DSN 2000**), June 2000.
 48. *Failure detection and consensus in the crash-recovery model.*
Marcos K. Aguilera, Wei Chen, Sam Toueg.
Distributed Computing journal (**DIST COMP**), April 2000.
 49. *On quiescent reliable communication.*
Marcos K. Aguilera, Wei Chen, Sam Toueg.
SIAM Journal on Computing (**SICOMP**), April 2000.
 50. *Revisiting the weakest failure detector for uniform reliable broadcast.*
Marcos K. Aguilera, Sam Toueg, Borislav Deianov.

- International Symposium on Distributed Computing (**DISC 1999**), September 1999.
51. *A simple bivalency proof that t -resilient consensus requires $t+1$ rounds.*
Marcos K. Aguilera, Sam Toueg.
Information Processing Letters (**IPL**), August 1999.
 52. *Using the heartbeat failure detector for quiescent reliable communication and consensus in partitionable networks.*
Marcos K. Aguilera, Wei Chen, Sam Toueg.
Theoretical Computer Science journal (**TCS**), June 1999.
 53. *Matching events in a content-based subscription system.*
Marcos K. Aguilera, Robert E. Strom, Daniel C. Sturman, Mark Astley, Tushar D. Chandra.
ACM Symposium on Principles of Distributed Computing (**PODC 1999**), May 1999.
 54. *Failure detection and consensus in the crash-recovery model.*
Marcos K. Aguilera, Wei Chen, Sam Toueg.
International Symposium on Distributed Computing (**DISC 1998**), September 1998.
 55. *Failure detection and randomization: a hybrid approach to solve consensus.*
Marcos K. Aguilera, Sam Toueg.
SIAM Journal on Computing (**SICOMP**), June 1998.
 56. *Heartbeat: a timeout-free failure detector for quiescent reliable communication.*
Marcos K. Aguilera, Wei Chen, Sam Toueg.
International Workshop on Distributed Algorithms (**WDAG 1997**), September 1997.
 57. *Randomization and failure detection: a hybrid approach to solve consensus.*
Marcos K. Aguilera, Sam Toueg.
International Workshop on Distributed Algorithms (**WDAG 1996**), October 1996.

KEYNOTE LECTURES

1. *Concurrent data structures for the next architectures.*
Workshop on Systems for Future Multicore Architectures (**SFMA**), April 2015.
2. *Yesquel: scalable SQL storage for web applications.*
Workshop on Principles and Practice of Consistency for Distributed Data (**PaPoC**), April 2015.
3. *The evolution of storage systems for web applications.*
International Conference on Distributed Computing and Networking (**ICDCN**), January 2015.
4. *Geo-distributed storage in data centers.*
International Conference on Principles of Distributed Systems (**OPODIS**), December 2013.

RECENT TUTORIALS AND SEMINARS

1. *Transaction chains.*
University of California, Berkeley, August 2013.
2. *Detecting remote failures intelligently in distributed systems.*
Carnegie Mellon University, June 2013.
3. *Tutorial: geo-replication in data center applications.*
ACM Int. Conf. on Measurement and Modeling of Computer Systems (**SIGMETRICS**), June 2013.

4. *The emperor's new consistency: the case against weak consistency in data centers.*
Dagstuhl Seminar: Consistency in Distributed Systems, February 2013.
5. *Fundamentals of distributed algorithms.*
MSR India Summer School on Distributed Algorithms, Systems, and Programming, June 2012.

BOOKS EDITED

1. *Proceedings of the 18th international conference on principles of distributed systems.*
Marcos K. Aguilera, Mark Shapiro (PC co-chairs).
Springer, to appear.
2. *Proceedings of the 12th international conference on distributed computing and networking.*
Marcos K. Aguilera, Haifeng Yu, Nitin Vaidya, Vikram Srinivasan, Romit Choudhury (PC co-chairs).
Springer, January 2011.
3. *Proceedings of the 24th annual ACM symposium on principles of distributed computing.*
Marcos K. Aguilera, James Aspnes (chairs and editors).
ACM Press, July 2005.

NEWSLETTERS, BOOK CHAPTERS, AND OTHER PUBLICATIONS

1. *Multi-data center replication protocols*, Encyclopedia of Database Systems.
Marcos K. Aguilera.
Springer, to be published in 2014.
2. *Reconfiguring replicated atomic storage: a tutorial.*
Marcos K. Aguilera, Idit Keidar, Dahlia Malkhi, Jean-Philippe Martin, Alexander Shraer.
Distributed Computing column, bulletin of the EATCS, October 2010.
3. *Stumbling over consensus research: misunderstandings and issues.*
Marcos K. Aguilera.
Replication: Theory and Practice. LNCS 5959, Chapter 4, March 2010.
4. *Autograph: automatically extracting workflow file signatures.*
Anna Povzner, Kim Keeton, Arif Merchant, Charles Morrey, Mustafa Uysal, Marcos K. Aguilera.
Operating Systems Review (**OSR**), January 2009.
5. *A pleasant stroll through the land of infinitely many creatures.*
Marcos K. Aguilera.
ACM SIGACT News, June 2004.

STUDENT INTERNS

At VMware Research Group	Tudor David (EPFL), summer 2015
At Microsoft Research Silicon Valley	Irina Calciu (Brown), summer 2014
	Ankita Kejriwal (Stanford), summer 2013
	Joshua B. Leners (UT Austin), summer 2011 and winter 2013
	Brian Cho (UIUC), summer 2010
	Nguyen Tran (NYU), summer 2009
	Yee Jiun Song (Cornell), summer 2008
At HP Laboratories	Wojciech Golab (U. Toronto), summer 2006
	Ramaprabhu Janakiraman (WUSTL), summer 2002

THESIS COMMITTEES

Chao Xie, University of Texas at Austin, in progress
Radu Banabic, EPFL, 2015
Joshua B. Leners, University of Texas at Austin, 2015
Dilip Simha, Stony Brook University, 2014
Yair Sovran, New York University, 2012
Brian Cho, University of Illinois at Urbana-Champaign, 2011
Victor Bhatt, Dartmouth College, 2010
Ramaprabhu Janakiraman, Washington University in Saint Louis, 2005

PATENTS GRANTED

1. *Inferring causal paths in a distributed computing environment.*
Patrick A. Reynolds, Janet L. Wiener, Marcos K. Aguilera, Jeffrey C. Mogul.
U. S. Pat. 9,178,721. Issued in 2015.
2. *Selecting computing nodes in cloud service using replication topologies.*
Mahesh Balakrishnan, Marcos K. Aguilera, Birjodh Tiwana, Hitesh Ballani.
U. S. Pat. 9,110,724. Issued in 2015.
3. *Consistency-based service-level agreements in cloud storage environments.*
Hussam Abu-Libdeh, Marcos K. Aguilera, Mahesh Balakrishnan, Ramakrishna Kotla, Vijayan Prabhakaran, Douglas B. Terry.
U.S. Pat. 8,972,491. Issued in 2015.
4. *Modifying data structures in distributed file systems.*
Marcos K. Aguilera.
U.S. Pat. 8,972,345. Issued in 2015.
5. *Snapshots in distributed storage systems.*
Marcos K. Aguilera, Alistair Veitch, Susan Spence. U.S. Pat. 8,935,206. Issued in 2015.
6. *Providing a distributed balanced tree across plural servers.*
Marcos K. Aguilera, Wojciech Golab, Mehul Shah.
U.S. Pat. 8,909,677. Issued in 2014.
7. *Methods of writing and recovering erasure coded data.*
Marcos K. Aguilera, Ramaprabhu Janakiraman.
U.S. Pat. 8,726,129. Issued in 2014.
8. *System for and method of writing and reading redundant data.*
Marcos K. Aguilera, Ram Swaminathan.
U.S. Pat. 8,533,478. Issued in 2013.
9. *System and method for ascribing resource consumption to activity in a causal path of a node of a distributed computing system.*
Jeffrey C. Mogul, Janet L. Wiener, Marcos K. Aguilera, Keith I. Farkas, Parthasarath Ranganathan.
U.S. Pat. 8,364,829. Issued in 2013.
10. *Identifying files associated with a workflow.*
Anna Povzner, Kim Keeton, Marcos K. Aguilera, Arif Merchant, Charles Morrey, Mustafa Uysal.

- U.S. Pat. 8,019,765. Issued in 2011.
11. *Recoverability of a dataset associated with a multi-tier storage system.*
Mustafa Uysal, Arif Merchant, Kim Keeton, Marcos K. Aguilera, K.-K. Muniswamy-Reddy.
U.S. Pat. 7,979,742. Issued in 2011.
 12. *System and method for preventing replay attacks.*
Marcos K. Aguilera, Mark D. Lillibridge, John P. MacCormick.
U.S. Pat. 7,926,103. Issued in 2011.
 13. *Tracing information flow using a signature.*
Marcos K. Aguilera.
U.S. Pat. 7,882,508. Issued in 2011.
 14. *Transactional shared memory system and method of control.*
Marcos K. Aguilera, Christos Karamanolis, Arif Merchant, Mehul Shah, Alistair Veitch.
U.S. Pat. 7,647,454. Issued in 2010.
 15. *Group communication system and method.*
Mehul Shah, Marcos K. Aguilera, Christos Karamanolis, Arif Merchant, Alistair Veitch.
U.S. Pat. 7,609,703. Issued in 2009.
 16. *Electronic message authentication.*
Minwen Ji, Kan Zhang, Marcos K. Aguilera, Mark Lillibridge.
U.S. Pat. 7,437,559. Issued in 2008.
 17. *Method of seeking consensus among computer processes.*
Marcos K. Aguilera, Svend Frolund.
U.S. Pat. 7,376,867. Issued in 2008.
 18. *Analysis of causal relations between intercommunicating nodes.*
Marcos K. Aguilera, Jeff Mogul.
U.S. Pat. 7,254,646. Issued in 2007.
 19. *Method and apparatus for estimating time delays in systems of communicating nodes.*
John MacCormick, Marcos K. Aguilera.
U.S. Pat. 7,027,951. Issued in 2006.
 20. *Heartbeat failure detector method and apparatus.*
Marcos K. Aguilera, Wei Chen, Sam Toueg.
U.S. Pat. 6,728,781. Issued in 2004.
 21. *Failure detector with consensus protocol.*
Marcos K. Aguilera, Wei Chen, Sam Toueg.
U.S. Pat. 6,687,847. Issued in 2004.

PATENTS PENDING

1. *Distributed SQL query processing using key-value storage system.*
Marcos K. Aguilera, Joshua Leners, Michael Walfish.
Filed in 2012.
2. *Replicating data across data centers.*
Marcos K. Aguilera, Brian Cho.
Filed in 2012.

3. *Remote procedure call chains.*
Marcos K. Aguilera, Rama Kotla, Dahlia Malkhi, Yee Jiun Song.
Filed in 2009.
4. *Reconfiguration isolation using independent quorum systems in time-stamped redundant storage.*
James Michael Reuter, Alistair Veitch, and Marcos K. Aguilera.
Filed in 2006.
5. *Method and system for securing block-based storage with capability data.*
Marcos K. Aguilera, Minwen Ji, Mark Lillibridge, John MacCormick, Erwin Oertli, David Andersen, Michael Burrows, Timothy Mann, Chandramohan Thekkath.
Filed in 2003.
6. *Method and system for managing access control.*
Marcos K. Aguilera, Minwen Ji, Mark Lillibridge, John MacCormick, Erwin Oertli, David Andersen, Michael Burrows, Timothy Mann, Chandramohan Thekkath.
Filed in 2003.
7. *System and method for preventing replay attacks.*
Marcos K. Aguilera, Mark Lillibridge, John MacCormick.
Filed in 2003.

CITIZENSHIP

United States of America

Brazil