

# Amin Vahdat

Department of Computer Science and Engineering  
University of California, San Diego  
9500 Gilman Drive, Dept. 0404  
La Jolla, CA 92093-0404

Email: [vahdat@cs.ucsd.edu](mailto:vahdat@cs.ucsd.edu)  
Telephone: (858) 534-4614  
Fax: (858) 534-7029  
URL: <http://www.cs.ucsd.edu/~vahdat>

## Research Interests

Distributed Systems, Computer Networks, Operating Systems, Mobile/Wireless Systems.

## Education

### **Ph.D. Computer Science**

University of California, Berkeley, 1998.

Dissertation: "Operating System Services for Wide-Area Applications," supervised by Thomas Anderson.

### **B.S. Electrical Engineering and Computer Science**

University of California, Berkeley, 1992.

## Academic Experience

- 2003-Present* Professor and Sciences Application International Corporation Chair  
**University of California San Diego**
- 2005-Present* Director, Center for Networked Systems (<http://cns.ucsd.edu>)  
**University of California San Diego**
- 1998-2003* Associate Professor, Assistant Professor (1998-2003)  
**Duke University**
- 1997-1998* Research Associate  
**University of Washington**
- 1992-1997* Graduate Student Researcher  
**University of California, Berkeley**

## Industrial Experience

- 2010-Present* Principal Engineer  
**Google**
- 2006-2010* Technical Advisory Board  
**Ripple TV**
- 2006-2008* Technical Advisory Board, Internet Services  
**Microsoft**
- 2003* Visiting Scholar  
**Intel Research Berkeley**
- 2000-2001* Chief Scientist  
**WebOS**
- 1999* Chief Scientist  
**Porivo**

### **Awards and Honors**

1. Best paper award, *USENIX/ACM Symposium on Operating Systems Design and Implementation (OSDI)*, 2008.
2. Sciences Application International Corporation Chair in Engineering, UC San Diego, 2008.
3. Best paper award, *USENIX/ACM Symposium on Networked Systems Design and Implementation (NSDI)*, 2007.
4. *Alfred P. Sloan Fellowship*, 2003.
5. Duke University *David and Janet Vaughn Brooks Distinguished Teaching Award*, 2003.
6. *IBM Faculty Partnership Award*, 2002-2003.
7. Award paper, *USENIX Annual Technical Conference*, 2002.
8. Award paper, *Operating Systems Design and Implementation (OSDI)*, 2000.
9. *NSF CAREER Award*, 2000.

### **Journal Publications**

1. Radhika Niranjana Mysore, George Porter, and Sivasankar Radhakrishnan, Mohammad Al-Fares, Nathan Farrington, "Scale-Out Networking in the Data Center, Amin Vahdat." *IEEE MICRO* 30(4):29-41, August 2010.
2. Difference Engine: Harnessing Memory Redundancy in Virtual Machines, [Diwaker Gupta](#), Sangmin Lee, Michael Vrable, [Stefan Savage](#), Alex C. Snoeren, [George Varghese](#), [Geoffrey M. Voelker](#), and [Amin Vahdat](#), *Communications of the Association for Computing Machinery* 53(10):85-93, October 2010.
3. Hyperbolic Geometry of Complex Networks, Dmitri Krioukov, Fragkiskos Papadopoulos, Maksim Kitsak, Amin Vahdat, and Marian Boguna, *Physical Review E* 82(3), September 2010.
4. Dmitri Krioukov, Fragkiskos Papadopoulos, Amin Vahdat, and Marián Boguñá, Curvature and Temperature of Complex Networks, *Physical Review E*, 80(3):035101, September 2009.
5. Xenofontas Dimitropoulos, Dmitri Krioukov, Amin Vahdat, George Riley, "Graph Annotations in Modeling Complex Network Topologies." *ACM Transactions on Modeling and Computer Simulation (TOMACS)*, vol. 19, no. 4, September 2009.
6. Kashi Vishwanath and Amin Vahdat, "Realistic and Responsive Network Traffic Generation." *IEEE/ACM Transactions on Networking*, August 2009.
7. Diwaker Gupta, Sangmin Lee, Michael Vrable, Stefan Savage, Alex C. Snoeren, George Varghese, Geoffrey M. Voelker, and Amin Vahdat, "Difference Engine: Harnessing Memory Redundancy in Virtual Machines." *USENIX ;login:* 34(2), April 2009.
8. Jeannie Albrecht, David Oppenheimer, David Patterson, and Amin Vahdat, "Design and Implementation Tradeoffs for Wide-Area Resource Discovery." *Transactions on Internet Technology (TOIT)* 8(4), September 2008.
9. Dejan Kostić, Alex C. Snoeren, Amin Vahdat, Ryan Braud, Charles Killian, Jeannie Albrecht, James W. Anderson, Adolfo Rodriguez, and Erik VandeKieft, "High Bandwidth Data Dissemination for Large-scale Distributed Systems." *ACM Transactions on Computer Systems* 26(1), February 2008.
10. Jeannie Albrecht, Ryan Braud, Darren Dao, Nikolay Topilski, Christopher Tuttle, Alex C. Snoeren, and Amin Vahdat, "Remote Control: Distributed Application Configuration, Management, and Visualization with Plush." *USENIX ;login:* 33(1), February 2008.
11. Diwaker Gupta, Lucy Cherkasova, and Amin Vahdat, "Comparison of the Three CPU Schedulers in Xen." *ACM SIGMETRICS Performance Evaluation Review (PER)* 35(2):42-51, September 2007.

12. Chalermek Intanagonwiwat, Rajesh Gupta, and Amin Vahdat, "Declarative Resource Naming for Macroprogramming Wireless Networks of Embedded Systems." *Lecture Notes in Computer Science* 4240/2006:192-199, January 2007.
13. Wenting Tang, Yun Fu, Ludmila Cherkasova, and Amin Vahdat, "Modeling and Generating Realistic Streaming Media Server Workloads." *Journal of Computer Networks (ComNet)*, Elsevier, Volume 51, Issue 1, 2007.
14. Ludmila Cherkasova, Wenting Tang, and Amin Vahdat, "A Unified Benchmarking and Model-Based Framework for Building QoS-aware Streaming Media Services." *Multimedia Systems Journal*, 11(6), July 2006.
15. Priya Mahadevan, Adolfo Rodriguez, David Becker, and Amin Vahdat, "MobiNet: A Scalable Emulation Infrastructure for Ad Hoc and Wireless Networks." *ACM SIGMOBILE Mobile Computing and Communications Review (MC2R)*, April 2006.
16. Haifeng Yu and Amin Vahdat, "The Costs and Limits of Availability for Replicated Services." *ACM Transactions on Computer Systems*, 24(2), February 2006.
17. Priya Mahadevan, Dimitri Krioukov, Marina Fomenkov, Brad Huffaker, Xenofontas Dimitripoulos, k claffy, and Amin Vahdat, "The Internet AS-Level Topology: Three Data Sources and One Definitive Metric." *ACM SIGCOMM Computer Communications Review*, January 2006.
18. Robert Ricci, David Oppenheimer, Jay Lepreau, and Amin Vahdat, "Experiences With Resource Allocators for Large-Scale Multiuser Testbeds." *ACM Operating Systems Review (OSR)*, 40(1), January 2006.
19. Jeannie Albrecht, Christopher Tuttle, Alex Snoeren, and Amin Vahdat, "PlanetLab Application Management Using Plush." *ACM Operating Systems Review (OSR)*, 40(1), January 2006.
20. Haifeng Yu and Amin Vahdat, "Consistent and Automatic Replica Regeneration." *ACM Transactions on Storage* 1(1):3-37, February 2005.
21. Ludmila Cherkasova, Yun Fu, Wenting Tang, and Amin Vahdat, "Passive End-to-End Internet Service Performance." *ACM Transactions on Internet Technologies (TOIT)*, November 2003.
22. Haifeng Yu and Amin Vahdat, "Design and Evaluation of a Conit-based Continuous Consistency Model for Replicated Services." *ACM Transactions on Computer Systems (TOCS)*, vol. 20, no. 3, August 2002.
23. Amin Vahdat, Jeffrey Chase, Rebecca Braynard, Dejan Kostic, Adolfo Rodriguez, "Self-organizing Subsets: From Each According to His Abilities, To Each According to His Needs." *Springer-Verlag Lecture Notes in Computer Science series*, vol. 2429, p. 76-84, July 2002.
24. Ronald P. Doyle, Jeffrey S. Chase, Syam Gadde and Amin Vahdat, "The Trickle-Down Effect: Web Caching and Server Request Distribution." *Computer Communication*, vol. 24, no. 4, p. 345-356, March 2002.
25. Darrell Anderson, Jeff Chase, and Amin Vahdat, "Interposed Request Routing for Scalable Network Storage." *ACM Transactions on Computer Systems (TOCS)*, Volume 20, number 1, February 2002.
26. Surendar Chandra, Carla Schlatter Ellis and Amin Vahdat, "Application-Level Differentiated Multimedia Web Services Using Quality Aware Transcoding." *IEEE Journal on Selected Areas in Communications (JSAC)- Special Issue on QOS in the Internet*, volume 18, no. 12, December 2000.
27. Stefan Savage, Thomas Anderson, Amit Aggarwal, David Becker, Neal Cardwell, Andy Collins, Eric Hoffman, John Snell, Amin Vahdat, Geoff Voelker, and John Zahorjan, "Detour: A Case for Informed Internet Routing and Transport." *IEEE Micro*, volume 19, no. 1, January 1999.
28. Douglas Ghormley, David Petrou, Steve Rodrigues, Amin Vahdat, and Thomas Anderson, "GLUnix: a Global Layer Unix for a Network of Workstations." *Software-Practice and Experience*, Vol. 28,

No. 9, July 25, 1998.

### **Journal Articles in Preparation and Review**

29. Amin Vahdat and David Becker, "Epidemic Routing for Partially Connected Ad Hoc Networks," in review.

### **Book Chapters**

30. Alvin AuYoung, Phil Buonadonna, Brent N. Chun, Chaki Ng, David C. Parkes, Jeff Shneidman, Alex C. Snoeren, and Amin Vahdat, "Two Auction-Based Resource Allocation Environments: Design and Experience." In *Market Oriented Grid and Utility Computing*. Rajkumar Buyya and Kris Bubendorfer, editors. Wiley, 2009.
31. Amin Vahdat, Michael Dahlin, and Thomas Anderson, "WebOS: Operating System Services for Wide-Area Applications," In *High Performance Cluster Computing: Programming and Applications*, Rajkumar Buyya (editor), ISBN 0-13-013785-5, Prentice Hall PTR, NJ, USA, 1999.
32. Gregor Kiczgalski, Michael Ashley, Luis Rodriguez, Amin Vahdat, and Daniel Bobrow, "Metaobject Protocols-Why We Want Them and What Else They Can Do." In Paepcke, A., editor, *Object-Oriented Programming: The CLOS Perspective*, MIT Press, 1993.

### **Conference Publications**

33. ALIAS: Scalable, Decentralized Label Assignment for Data Centers, Meg Walraed-Sullivan, Radhika Niranjana Mysore, Malveeka Tewari, Ying Zhang, Keith Marzullo, and Amin Vahdat, Proceedings of the ACM Symposium on Cloud Computing (SOCC), October 2011.
34. Switching the Optical Divide: Fundamental Challenges for Hybrid Electrical/Optical Datacenter Networks, Hamid Hajabdolali Bazzaz, Malveeka Tewari, Guohui Wang, George Porter, T.S.Eugene Ng, David G. Andersen, Michael Kaminsky, Michael A. Kozuch, and Amin Vahdat, Proceedings of the ACM Symposium on Cloud Computing (SOCC), October 2011.
35. TritonSort: A Balanced Large-Scale Sorting System, Alexander Rasmussen, George Porter, Michael Conley, Harsha V. Madhyastha, Radhika Niranjana Mysore, Alexander Pucher, and Amin Vahdat, *Proceedings of the 8th ACM/USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, Boston, MA, March 2011.
36. The Local and Global Effects of Traffic Shaping in the Internet, Massimiliano Marcon, Marcel Dischinger, Krishna P. Gummadi, and Amin Vahdat, Proceedings of the 3rd International Conference on Communication Systems and Networks (COMSNETS), January 2011.
37. Nathan Farrington, George Porter, Sivasankar Radhakrishnan, Hamid Bazzaz, Vikram Subramanya, Yeshaiah Fainman, George Papen, and Amin Vahdat, "Helios: A Hybrid Electrical/Optical Switch Architecture for Modular Data Centers." *Proceedings of the ACM SIGCOMM Conference*, New Delhi, India, August 2010.
38. Mohammad Al-Fares, Sivasankar Radhakrishnan, Barath Raghavan, Nelson Huang, and Amin Vahdat, "Hedera: Dynamic Flow Scheduling for Data Center Networks." *Proceedings of the 7th ACM/USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, San Jose, CA, April 2010.
39. Pongsakorn Teeraparpwong, Per Johansson, Harsha V. Madhyastha, and Amin Vahdat, "Operator and Radio Resource Sharing in Multi-Carrier Environments." *Proceedings of the 12th IEEE/IFIP Network Operations and Management Symposium (NOMS'10)*, April 2010.
40. Fragkiskos Papadopoulos, Dmitri Krioukov, Marian Boguna, and Amin Vahdat, "Greedy Forwarding in Dynamic Scale-Free Networks Embedded in Hyperbolic Metric Spaces." *IEEE INFOCOM*, March 2010.
41. Qing Zhang, John McCullough, Justin Ma, Nabil Schear, Michael Vrabie, Amin Vahdat, Alex C.

- Snoeren, Geoffrey M. Voelker, and Stefan Savage, "Neon: System Support for Derived Data Management." *Proceedings of the ACM SIGPLAN/SIGOPS International Conference on Virtual Execution Environments*, March 2010.
42. Alvin AuYoung, Amin Vahdat, and Alex C. Snoeren, "Evaluating the Impact of Inaccurate Information in Utility-Based Scheduling." *Proceedings of the ACM Conference on High Performance Computing and Networking*, November 2009.
  43. Radhika Niranjana Mysore, Andreas Pamboris, Nathan Farrington, Nelson Huang, Pardis Miri, Sivasankar Radhakrishnan, Vikram Subramanya, and Amin Vahdat, "PortLand: A Scalable Fault-Tolerant Layer 2 Data Center Network Fabric." *Proceedings of the ACM SIGCOMM Conference*, Barcelona, Spain, August 2009.
  44. Nathan Farrington, Erik Rubow, and Amin Vahdat, "Data Center Switch Architecture in the Age of Merchant Silicon." *Proceedings of the IEEE Symposium on Hot Interconnects*, August 2009.
  45. Venugopalan Ramasubramanian, Thomas L. Rodeheffer, Douglas B. Terry, Meg Walraed-Sullivan, Ted Wobber, Cathy Marshall, and Amin Vahdat, "Cimbiosys: A platform for content-based partial replication." *Proceedings of the 6th ACM/USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, April 2009.
  46. Darren Dao, Jeannie Albrecht, Charles Killian, and Amin Vahdat, "Live Debugging of Distributed Systems." *Proceedings of the International Conference on Compiler Construction*, March 2009.
  47. Diwaker Gupta, Sangmin Lee, Michael Vrable, Stefan Savage, Alex C. Snoeren, George Varghese, Geoffrey M. Voelker, and Amin Vahdat, "Difference Engine: Harnessing Memory Redundancy in Virtual Machines." *Proceedings of the 8th ACM/USENIX Symposium on Operating System Design and Implementation (OSDI)*, December 2008.
  48. A Scalable, Commodity, Data Center Network Architecture, Mohammad Al-Fares, Alex Loukissas, and Amin Vahdat, *Proceedings of the ACM SIGCOMM Conference*, August 2008.
  49. Kashi Vishwanath and Amin Vahdat, "Evaluating Distributed Systems: Does Background Traffic Matter?" *Proceedings of the USENIX Annual Technical Conference*, June 2008.
  50. Diwaker Gupta, Kashi Vishwanath, and Amin Vahdat, "DieCast: Testing Distributed Systems with an Accurate Scale Model." *Proceedings of the 5th ACM/USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, April 2008.
  51. Marvin McNett, Diwaker Gupta, Amin Vahdat, and Geoffrey M. Voelker, "Usher: An Extensible Framework for Managing Clusters of Virtual Machines." *Proceedings of the 21st USENIX Large Installation System Administration Conference (LISA)*, November 2007.
  52. Jeannie Albrecht, Ryan Braud, Darren Dao, Nikolay Topilski, Christopher Tuttle, Alex C. Snoeren, and Amin Vahdat, "Remote Control: Distributed Application Configuration, Management, and Visualization with Plush." *Proceedings of the 21st USENIX Large Installation System Administration Conference (LISA)*, November 2007.
  53. Priya Mahadevan, Calvin Hubble, Bradley Huffaker, Dimitri Krioukov, and Amin Vahdat, "Orbis: Rescaling Degree Correlations to Generate Annotated Internet Topologies." *Proceedings of the ACM SIGCOMM Conference*, August 2007.
  54. Charles Killian, James W. Anderson, Ryan Braud, Ranjit Jhala, and Amin Vahdat, "Mace: Language Support for Building Distributed Systems." *Proceedings of Programming Languages Design and Implementation (PLDI)*, June 2007.
  55. Charles Killian, James W. Anderson, Ranjit Jhala, and Amin Vahdat, "Life, Death, and the Critical Transition: Finding Liveness Bugs in Systems Code." *Proceedings of the 4th ACM/USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, April 2007.

56. Joshua Opos, Sriram Ramabhadran, Andrew Terry, Joe Pasquale, Alex C. Snoeren, and Amin Vahdat, "A Performance Analysis of Indirect Routing." *Proceedings of the IEEE International Parallel and Distributed Processing Symposium*, March 2007.
57. Diwaker Gupta, Ludmila Cherkasova, and Amin Vahdat, "Enforcing Performance Isolation Across Virtual Machines in Xen." *Proceedings of the ACM/IFIP/USENIX Middleware Conference*, November 2006.
58. Priya Mahadevan, Dimitri Krioukov, Kevin Fall, and Amin Vahdat, "Systematic Topology Analysis and Generation Using Degree Correlations." *Proceedings of the ACM SIGCOMM Conference*, September 2006.
59. Kashi Vishwanath and Amin Vahdat, "Realistic and Responsive Network Traffic Generation." *Proceedings of the ACM SIGCOMM Conference*, September 2006.
60. Jeannie Albrecht, Christopher Tuttle, Alex Snoeren, and Amin Vahdat, "Loose Synchronization for Large-Scale Networked Systems." *Proceedings of the USENIX Annual Technical Conference*, June 2006.
61. David Oppenheimer, Brent Chun, David Patterson, Alex Snoeren, and Amin Vahdat, "Service Placement in Shared Wide-Area Platforms." *Proceedings of the USENIX Annual Technical Conference*, June 2006.
62. Badrish Chandramouli, Jun Yang, and Amin Vahdat, "Distributed Network Querying with Bounded Approximate Caching." *11th International Conference on Database Systems for Advanced Applications (DASFAA)*, June 2006.
63. Patrick Reynolds, Janet Wiener, Jeffrey Mogul, Marcos Aguilera, and Amin Vahdat, "WAP5: Black-box Performance Debugging for Wide-Area Systems." *Proceedings of the 15th International World Wide Web Conference*, May 2006.
64. Diwaker Gupta, Ken Yocum, Marvin McNett, Alex Snoeren, Geoffrey Voelker, and Amin Vahdat, "To Infinity and Beyond: Time-Warped Network Emulation." *Proceedings of the 3rd ACM/USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, May 2006.
65. Patrick Reynolds, Janet Wiener, Jeffrey Mogul, Mehul Shah, Chip Killian, and Amin Vahdat, "Pip: Detecting the Unexpected in Distributed Systems." *Proceedings of the 3rd ACM/USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, May 2006.
66. David Oppenheimer, Jeannie Albrecht, David Patterson, and Amin Vahdat, "Design and Implementation Tradeoffs for Wide-Area Resource Discovery." *Proceedings of the 14th IEEE Symposium on High Performance Distributed Computing*, July 2005.
67. Dejan Kostic, Ryan Braud, Charles Killian, Erik VandeKieft, James W. Anderson, Alex C. Snoeren, and Amin Vahdat, "Maintaining High Bandwidth under Dynamic Network Conditions." *Proceedings of the USENIX Annual Technical Conference*, April 2005.
68. Alberto Blanc, Yi-Kai Liu, and Amin Vahdat, "Designing Incentives for Peer-to-Peer Routing." *Proceedings of the IEEE Infocom Conference*, March 2005.
69. Lucy Cherkasova, Wenting Tang, and Amin Vahdat, "MediaGuard: a Model-based Framework for Building Streaming Media Services." *Proceedings of the SPIE Conference on Multi-Media Computing and Networking (MMCN)*, January 2005.
70. Jay Chen, Diwaker Gupta, Kashi V. Vishwanath, Alex C. Snoeren, and Amin Vahdat, "Routing in an Internet-Scale Network Emulator." *Proceedings of the IEEE/ACM International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS)*, October 2004.

71. Adolfo Rodriguez, Charles Killian, Sooraj Bhat, Dejan Kostic, and Amin Vahdat, "MACEDON: Methodology for Automatically Creating, Evaluating, and Designing Overlay Networks." *Proceedings of the 1st ACM/USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, March 2004.
72. Haifeng Yu and Amin Vahdat, "Consistent and Automatic Service Regeneration." *Proceedings of the 1st ACM/USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, March 2004.
73. Adolfo Rodriguez, Dejan Kostic, and Amin Vahdat, "Scalability in Adaptive Multi-Metric Overlays." *Proceedings of the International Conference on Distributed Computing Systems (ICDCS)*, March 2004.
74. Dejan Kostic, Adolfo Rodriguez, Jeannie Albrecht, and Amin Vahdat, "Bullet: High Bandwidth Data Dissemination Using an Overlay Mesh." *Proceedings of the 19th ACM Symposium on Operating System Principles (SOSP)*, October 2003.
75. Yun Fu, Jeffrey S. Chase, Brent Chun, Stephen Schwab, and Amin Vahdat, "SHARP: An Architecture for Secure Resource Peering." *Proceedings of the 19th ACM Symposium on Operating System Principles (SOSP)*, October 2003.
76. Ken Yocum, Ethan Eade, Julius Degesys, David Becker, Jeff Chase, and Amin Vahdat, "Toward Scaling Network Emulation using Topology Partitioning." *Proceedings of the IEEE/ACM International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS)*, October 2003.
77. Patrick Reynolds and Amin Vahdat, "Efficient Peer-to-Peer Keyword Searching." *Proceedings of Middleware*, June 2003.
78. Heng Zeng, Carla S. Ellis, Alvin R. Lebeck, and Amin Vahdat, "Currentcy: A Unifying Abstraction for Expressing Energy Management Policies." *Proceedings of the USENIX Annual Technical Conference*, June 2003.
79. Dejan Kostic, Adolfo Rodriguez, Jeannie Albrecht, Abhijeet Bhirud, and Amin Vahdat, "Using Random Subsets to Build Scalable Network Services." *Proceedings of the USENIX Symposium on Internet Technologies and Systems (USITS)*, March 2003.
80. Ron Doyle, Jeff Chase, Omer Asad, and Amin Vahdat, "Model-Based Resource Provisioning in a Web Service Utility." *Proceedings of the USENIX Symposium on Internet Technologies and Systems (USITS)*, March 2003.
81. Ken Yocum, Darrell Anderson, Jeff Chase, and Amin Vahdat, "Anypoint: Extensible Transport Switching on the Edge." *Proceedings of the USENIX Symposium on Internet Technologies and Systems (USITS)*, March 2003.
82. Amin Vahdat, Ken Yocum, Kevin Walsh, Priya Mahadevan, Dejan Kostic, and David Becker, "Scalability and Accuracy in a Large-Scale Network Emulator." *Proceedings of Operating Systems Design and Implementation (OSDI)*, December 2002.
83. Heng Zeng, Xiaobo Fan, Carla Ellis, Alvin Lebeck, and Amin Vahdat, "ECOSystem: Managing Energy as a First Class Operating System Resource." *Proceedings of Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, October 2002.
84. Haifeng Yu and Amin Vahdat, "Minimal Cost Replication for Availability." *Proceedings of the Principles of Distributed Computing (PODC)*, July 2002.
85. Rebecca Braynard, Dejan Kostic, Adolfo Rodriguez, Jeffrey Chase, and Amin Vahdat, "The Case for an Overlay Utility Service." *Proceedings of the 5th International Conference on Open Architectures and Network Programming (OPENARCH)*, June 2002.

86. Surendar Chandra and Amin Vahdat, "Application-specific Network Management for Energy-aware Streaming of Popular Multimedia Formats." *Proceedings of the USENIX Annual Technical Conference*, June 2002.
87. Yun Fu, Ludmila Cherkasova, Wenting Tang, and Amin Vahdat, "EtE: Passive End-to-End Internet Service Performance." *Proceedings of the USENIX Annual Technical Conference*, June 2002.
88. Syam Gadde, Jeff Chase, Amin Vahdat. "Coarse-Grained Network Simulation for Wide-Area Distributed Systems." *Proceedings of Communication Networks and Distributed Systems Modeling and Simulation*, January 2002.
89. Haifeng Yu and Amin Vahdat, "The Costs and Limits of Availability for Replicated Services." *Proceedings of the Eighteenth ACM Symposium on Operating Systems Principles (SOSP)*, October 2001.
90. Jeffrey S. Chase, Darrell Anderson, Prachi Thakar, Amin Vahdat, and Ronald Doyle, "Managing Energy and Server Resources in Hosting Centers." *Proceedings of the Eighteenth ACM Symposium on Operating Systems Principles (SOSP)*, October 2001.
91. Haifeng Yu and Amin Vahdat, "Combining Generality and Practicality in a Conit-Based Continuous Consistency Model for Wide-Area Replication." *Proceedings of the International Conference on Distributed Computing Systems (ICDCS)*, April 2001.
92. William Mitchener and Amin Vahdat, "A Chat Room Assignment for Teaching Network Security." *Proceedings of the 32nd Technical Symposium on Computer Science Education*, February 2001.
93. Surendar Chandra, Ashish Gehani, Carla Schlatter Ellis and Amin Vahdat, "Transcoding Characteristics of Web Images." *Proceedings of Multimedia Computing and Networking 2001 (MMCN)*, January 2001.
94. Haifeng Yu and Amin Vahdat, "Design and Evaluation of a Continuous Consistency Model for Replicated Services." *Proceedings of the Fourth Symposium on Operating Systems Design and Implementation (OSDI)*, October 2000.
95. Darrell Anderson, Jeff Chase, and Amin Vahdat, "Interposed Request Routing for Scalable Network Storage." *Proceedings of the Fourth Symposium on Operating Systems Design and Implementation (OSDI)*, October 2000.
96. Haifeng Yu and Amin Vahdat, "Efficient Numerical Bounding for Replicated Network Services." *Proceedings of the 26<sup>th</sup> International Conference on Very Large Databases (VLDB)*, September 2000.
97. Surendar Chandra, Carla Schlatter Ellis, and Amin Vahdat, "Differentiated Multimedia Web Services Using Quality Aware Transcoding." *Proceedings of INFOCOM 2000 - Nineteenth Annual Joint Conference of the IEEE Computer And Communications Societies*, March 2000.
98. Geoff C. Berry, Jeffrey S. Chase, Geoff A. Cohen, Landon P. Cox, and Amin Vahdat, "Toward Automatic State Management for Dynamic Web Services." *Proceedings of the 1999 Network Storage Symposium (Netstore)*, October 1999.
99. Amin Vahdat, Michael Dahlin, Thomas Anderson, and Amit Aggarwal, "Active Names: Flexible Location and Transport of Wide-Area Resources." *Proceedings of the Second USENIX Symposium on Internet Technologies and Systems (USITS)*, October 1999.
100. Amin Vahdat, "Toward Wide-Area Resource Allocation." *Proceedings of Parallel and Distributed Processing Techniques and Applications*, June 1999.
101. Amin Vahdat, Thomas Anderson, Michael Dahlin, Eshwar Belani, David Culler, Paul Eastham, and Chad Yoshikawa, "WebOS: Operating System Services For Wide-Area Applications." *Proceedings of the Seventh Symposium on High Performance Distributed Computing (HPDC)*, July 1998.



102. Amin Vahdat and Thomas Anderson, "Transparent Result Caching." *Proceedings of the 1998 USENIX Technical Conference*, June 1998.
103. Eshwar Belani, Amin Vahdat, Thomas Anderson, and Michael Dahlin, "The CRISIS Wide Area Security Architecture." *Proceedings of the Seventh Usenix Security Symposium*, January 1998.
104. Richard Martin, Amin Vahdat, David Culler, and Thomas Anderson, "Effects of Communication Latency, Overhead, and Bandwidth in a Cluster Architecture." *Proceedings of the 1997 International Symposium on Computer Architecture (ISCA)*, June 1997.
105. Chad Yoshikawa, Brent Chun, Paul Eastham, Amin Vahdat, Thomas Anderson, and David Culler, "Using Smart Clients to Build Scalable Services." *Proceedings of the 1997 USENIX Technical Conference*, January 1997.
106. Remzi Arpaci, Andrea Dusseau, Amin Vahdat, Lok Liu, Thomas Anderson, and David Patterson, "The Interaction of Parallel and Sequential Workloads on a Network of Workstations." *Proceedings of SIGMETRICS 95*, May 1995.
107. Keith Krueger, David Loftesness, Amin Vahdat, and Thomas Anderson, "Tools for the Development of Application-Specific Virtual Memory Management." *Proceedings of the Conference on Object-Oriented Programming: Systems, Languages, and Applications (OOPSLA)*, October 1993.

### **Workshop Publications**

108. Frank Uyeda, Diwaker Gupta, Amin Vahdat, and George Varghese, "GrassRoots: Socially-Driven Web Sites for the Masses." *Workshop on Online Social Networks*, August 2009.
109. Mohammad Al-Fares, Martin Johnsson, Per Johansson, and Amin Vahdat, "Flexible Resource Allocation and Composition Across GSM/3G Networks and WLANs." *Proceedings of the International Workshop on Mobility in the Evolving Internet Architecture (MobiArch)*, August 2008.
110. Nick Topilski, Jeannie Albrecht, and Amin Vahdat, "Improving Scalability and Fault Tolerance in an Application Management Infrastructure." *Proceedings of the USENIX Workshop on Large-Scale Computing (LASCO)*, June 2008.
111. Ludmila Cherkasova, Diwaker Gupta, Eygene Ryabinkin, Roman Kurakin, Vladimir Dobretsov, and Amin Vahdat, "Optimizing Grid Site Manager Performance with Virtual Machines." *Proceedings of the 3rd USENIX Workshop on Real, Large Distributed Systems (WORLDS)*, December 2006.
112. Nabil Schear, Carmelo Kintana, Qing Zhang, and Amin Vahdat, "Glavlit: Preventing Exfiltration at Wire Speed." *Proceedings of the 5th ACM Workshop on Hot Topics in Networks (HotNets-V)*, November 2006.
113. Chaki Ng, Philip Buonadonna, Brent N. Chun, Alex C. Snoeren, and Amin Vahdat, "Addressing Strategic Behavior in a Deployed Microeconomic Resource Allocator." *Proceedings of the Third Workshop on Economics of Peer-to-Peer Systems*, August 2005.
114. Priya Mahadevan, Adolfo Rodriguez, David Becker, and Amin Vahdat, "MobiNet: A Scalable Emulation Infrastructure for Ad Hoc and Wireless Networks." *International Workshop on Wireless Traffic Measurements and Modeling*, June 2005.
115. Chip Killian, Michael Vrable, Alex C. Snoeren, Amin Vahdat, and Joseph Pasquale, "Brief Announcement: The Overlay Network Content Distribution Problem." *Proceedings of the ACM Symposium on Principles of Distributed Computing (PODC)*, July 2005.
116. Jeffrey Shneidman, Chaki Ng, David Parkes, Alvin AuYoung, Alex C. Snoeren, Amin Vahdat, and Brent N. Chun, "Why Markets Could (But Don't Currently) Solve Resource Allocation Problems in Systems." *Proceedings of the 10th USENIX Workshop on Hot Topics in Operating Systems (HotOS-X)*, June 2005.

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121. Alberto Blanc, Yi-Kai Liu, and Amin Vahdat, Designing Incentives for Peer-to-Peer Routing, *Proceedings of the Second Workshop on Economics of Peer-to-Peer Systems*, June 2004.
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125. Yun Fu and Amin Vahdat, "Service Level Agreement Based Distributed Resource Allocation for Streaming Hosting Systems." *Proceedings of the Seventh International Workshop on Web Caching and Content Distribution (WCW)*, August 2002.
126. Amin Vahdat, "Dynamically Provisioning Distributed Systems to Meet Target Levels of Performance, Availability, and Data Quality." *Proceedings of the workshop on Future Challenges to Distributed Computing*, June 2002.
127. Amin Vahdat, Jeffrey Chase, Rebecca Braynard, Dejan Kostic, Patrick Reynolds, Adolfo Rodriguez, "Self-organizing Subsets: From Each According to His Abilities, To Each According to His Needs." *Proceedings of the International Peer to Peer Symposium (IPTPS)*, March 2002.
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131. Ken Yocum, Darrell Anderson, Jeff Chase, and Amin Vahdat, "Position Summary: Anypoint Communication Protocol." *Proceedings of the Eight IEEE Workshop on Hot Topics in Operating Systems (HotOS)*, May 2001.

132. Amin Vahdat, Alvin Lebeck and Carla S. Ellis, "Every Joule is Precious: The Case for Revisiting Operating System Design for Energy Efficiency." *Proceedings of the 9th ACM SIGOPS European Workshop*, September 2000.
133. Surendar Chandra, Carla Schlatter Ellis and Amin Vahdat, "Managing the Storage and Battery Resources in an Image Capture Device (Digital Camera) using Dynamic Transcoding." *Proceedings of the Third ACM International Workshop on Wireless and Mobile Multimedia (WoWMoM'00)*, August 2000.
134. Haifeng Yu and Amin Vahdat, "Building Replicated Internet Services Using TACT: Tunable Availability/Consistency Tradeoffs." *Proceedings of the Second International Workshop on Advanced issues of E-Commerce and Web-Based Information Systems (WECWIS 2000)*, June 2000.
135. Surendar Chandra, Carla Schlatter Ellis, and Amin Vahdat, "Multimedia Web Services for Mobile Clients Using Quality Aware Transcoding." *Proceedings of the Second ACM/IEEE International Workshop on Wireless and Mobile Multimedia*, August 1999.

### **Student Advising**

- *Graduated PhD Students (10)*: Haifeng Yu (August 2002, Assistant Professor, National University of Singapore), Adolfo Rodriguez (December 2003, IBM Corporation), Yun Fu (December 2004, Yahoo! Corporation), Dejan Kostic (August 2005, Assistant Professor, EPFL), Patrick Reynolds (May 2006, Postdoctoral Researcher, Cornell University), Jeannie Albrecht (June 2007, Assistant Professor, Williams University), Priya Mahadevan (August 2007, Hewlett Packard Laboratories), Chip Killian (September 2008, Assistant Professor, Purdue University), Kashi Vishwanith (December 2008, Microsoft Research), Diwaker Gupta (March 2009, Aster Data).
- *Current PhD Students (9)*: James Anderson (2004), Ryan Braud (2004), Meg Walraed-Sullivan (2005), Frank Uyeda (2006), Alex Rasmussen (2007), Mohammad Al-Fares (2007), Nathan Farrington (2008), Radhika Niranjana (2008), Michael Conley (2009), Malveeka Tewari (2009).
- *Graduated MS Students (24)*: Nisha Kapur (May 2000), Kurt Van Delden (May 2000), Rui He (August 2000), Tao Jin (December 2000), Yun Fu (May 2001), Adolfo Rodriguez (May 2001), Prachi Thakar (May 2001), Nadia Rehman (December 2001), Marty Gilbert (January 2002), Jeannie Albrecht (December 2003), Priya Mahadevan (December 2003), Patrick Reynolds (December 2003), Badrish Chandramouli (May 2004), Frank Uyeda (June 2006), Carmelo Kintana (June 2007), Sangmin Lee (August 2007), Nabil Schear (June 2007), Darren Dao (June 2008), Alexander Loukissas (June 2008), Nikolay Topilski (September 2008), Jim Hong (March 2009), Andreas Pamporis (September 2009), Pongsakorn Teeraparpwong (September 2009).
- *Current MS Students (8)*: Hamid Bazzaz, Sambit Das, Nelson Huang, Pardis Miri, Erik Rubow, Sivasankar Radhakrishnan, Aram Shahinfard, Vikram Subramanya.

### **Selected Program Committees**

- 2010 USENIX/ACM Symposium on Operating Systems Design and Implementation (*OSDI*).
- 2010 ACM SIGCOMM Conference.
- 2009 ACM Workshop on Research on Enterprise Networking (*WREN*).
- 2009 ACM Workshop on Virtualized Infrastructure Systems and Architectures (*VISA*).
- 2009 USENIX/ACM Hot Topics in Operating Systems (*HotOS*).
- 2008 USENIX/ACM Symposium on Networked Systems Design and Implementation (*NSDI*).
- 2007 USENIX/ACM Hot Topics in Operating Systems (*HotOS*).
- 2007 USENIX Conference on File and Storage Technologies (*FAST*).
- 2006 ACM/IFIP/USENIX 7th International Middleware Conference (*Middleware*).

- 2006 ACM SIGCOMM workshop on Challenged Networks (*CHANTS*).
- 2006 IEEE International Symposium on High Performance Distributed Computing (*HPDC*).
- 2006 IEEE International Conference on Distributed Computing Systems (*ICDCS*).
- 2005 Workshop on the Economics of Peer-to-Peer Systems (*P2PEcon*).
- 2005 Workshop on Hot Topics in System Dependability (*HotDep*).
- 2005 ACM/USENIX Symposium on Networked Systems and Implementation (*NSDI, program co-chair*).
- 2004 Workshop on Real, Large Distributed Systems (*WORLDS*).
- 2004 World Wide Web Symposium (*WWW*).
- 2004 ACM/USENIX Symposium on Networked Systems Design and Implementation (*NSDI*).
- 2003 Symposium on Operating Systems Principles (*SOSP*).
- 2003 Principles of Distributed Computing (*PODC*).
- 2003 USENIX Technical Conference (*USENIX*).
- 2003 USENIX Conference on Mobile Systems, Applications, and Services (*MobiSys*).
- 2003 International Peer to Peer Symposium (*IPTPS*).
- 2003 International Conference on Distributed Computing Systems (*ICDCS*).
- 2003 USENIX Symposium on Internet Technologies (*USITS*).
- 2003 Symposium on Applications and the Internet (*SAINT*).
- 2002 Workshop on Hot Topics in Networks (*HotNets-I*).
- 2002 Architectural Support for Programming Languages and Operating Systems (*ASPLOS*).
- 2002 International Conference on Parallel Processing (*ICPP*).
- 2002 USENIX Technical Conference (*USENIX*).
- 2002 World Wide Web Conference (*WWW*).
- 2002 International Conference on Distributed Computing Systems (*ICDCS*).
- 2002 Conference on Multimedia Computing and Networks (*MMCN*).
- 2001 IEEE Workshop on Internet Applications (*WIAPP*).
- 2001 Workshop on Caching, Coherence and Consistency (*WC3*).
- 2001 IEEE Symposium on Computers and Communications (*ISCC*).
- 2000 Real Time Systems Symposium (*RTSS*).

### **Professional Activities**

- Steering Committee Chair: ACM/USENIX Symposium on Networked Systems Design and Implementation (*NSDI*).
- Member of the GENI Planning Group and co-chair Distributed Services working group, 2006-2007.
- NSF Workshop on Grand Challenges in Distributed Systems, 2005.
- Information Director: Association for Computing Machinery Special Interest Group on Operating Systems (ACM SIGOPS), 2001-2003.
- NSF/CRA Workshop on Grand Challenges in Information Systems, 2002.
- Panelist: NSF Proposal Review, 2000, 2001, 2002, 2003, 2004, 2009.
- Member of the Executive Committee of the IEEE Task Force on Cluster Computing, 1999-2002.
- Member of the ACM, IEEE, and the USENIX Computing Association.