Honorable Richard A. Jones

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
AT SEATTLE

ANCORA TECHNOLOGIES, INC., Plaintiff, v. HTC AMERICA, INC., a Washington Corporation, HTC CORPORATION, a Taiwanese corporation, Defendants.	Civil Action No. 2:16-cv-01919 -RAJ **DECLARATION OF JON B. WEISSMAN, PH.D. REGARDING CLAIM CONSTUCTION**

IPR2021-01406
ANCORA EX2006

KNOBBE, MARTENS, OLSON & BEAR, LLP
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I, Jon B. Weissman, declare as follows:

I. INTRODUCTION

1. I have been retained by Knobbe, Martens, Olson, & Bear LLP ("Knobbe Martens") on behalf of HTC Corporation and HTC America, Inc. ("HTC" or "Petitioner") as an independent expert in this case. Although I am being compensated at my usual rate of $500 per hour for the time I spend on this matter, no part of my compensation depends on the outcome of this proceeding, and I have no other interest in this case.

2. I understand that this case involves U.S. Patent No. 6,411,941 ("the '941 patent"). The application for the '941 patent was filed on October 1, 1998, as U.S. Patent Application No. 09/164,777, and the patent issued on June 25, 2002.

3. I have been asked by counsel to review relevant materials and render my expert opinion in connection with technical matters related to the '941 patent. I previously set forth my opinions in a declaration dated May 25, 2017, Exhibit 1009 ("Previous Declaration") in *HTC Corp. v. Ancora Techs. Inc.*, CBM2017-00054 (filed May 26, 2017). My opinions regarding claim construction are set forth below.

4. My academic and professional background is set forth in my Previous Declaration in paragraphs 4-9. My curriculum vitae, which includes a more detailed summary of my background, experience, and publications, is attached as Appendix A.

5. In forming my opinions, I have reviewed the '941 patent, the prosecution history of the '941 patent (including the reexamination file history), the August 26, 2019 declaration of Ian Jestice, and the documents cited by Mr. Jestice.

6. My understanding of the legal standards for claim construction is set forth in my Previous Declaration in paragraphs 15-18. I further understand that at the district court, the claim

construction standard differs from the broadest reasonable interpretation standard that applied in the patent office proceeding.

7. I set forth an overview of the ’941 patent, its file history, the level of ordinary skill in the art in my Previous Declaration in paragraphs 33-43.

8. In my opinion, a person of ordinary skill in the art would not understand the “agent” of claim 1 to have any definite structure, whether it is software, hardware, or a combination of both. The term “agent” is broad enough to encompass hardware and/or software computational entities. For example, U.S. Patent No. 5,568,552, which is in a similar technological field as the ’941 patent, describes a hardware agent for enforcing software licenses. *See, e.g.,* U.S. Pat. No. 5,568,552 at 1:19-25, 3:1-10, 8:55-9:12. In other contexts, an agent could be a software daemon or another type of program that is a computational entity. I stated this opinion in my Previous Declaration in paragraph 71.

9. Nothing in the claim language itself specifies any particular structure. Similarly, because of the complete lack of any disclosure of an agent in the ’941 patent specification, the specification fails to define “agent” in any terms, let alone by structural terms. Further, there is nothing in the ’941 patent specification that a person of ordinary skill in the art would consider to disclose an agent. Rather, a person of ordinary skill in the art would only understand the “agent” in the context of the claimed functions that the “agent” is required to perform in the claims. I stated this opinion in my Previous Declaration in paragraphs 72 and 74.

10. The claimed function of the “agent” in claim 1 is “to set up a verification structure in the erasable, non-volatile memory of the BIOS.” There is no disclosure of hardware or software that performs this function in the ’941 patent specifications. Rather, at most, a person of ordinary skill in the art would understand that the ’941 patent specification describes generic, high-level

functions that could potentially be used to setup a verification structure as well as for other purposes. There is no disclosure in the ’941 patent of any structure, whether a software algorithm, hardware, or a combination of both, that performs these functions. I stated this opinion in my Previous Declaration in paragraph 73.

11. Furthermore, claim 1 recites that the verification structure is “in the erasable, nonvolatile memory of the BIOS.” The specification’s disclosure of the “set up” step, by contrast, describes only the processes of: (i) “establishing or certifying the existence of a pseudo-unique key in the first non-volatile memory area” (id. at 6:18-20)—which is non-erasable (id. at 2:1-3); and (ii) and “establishing at least one license-record location in the first or the second nonvolatile memory area” (id. at 6:20-22 (emphasis added)). The first step (i) is not in the erasable, nonvolatile memory of the BIOS because the first non-volatile memory area is non-erasable. The second step, at most, establishes a “location,” but does not actually perform a function of setting up a “verification structure in the erasable, non-volatile memory of the BIOS” or explain how to achieve this setting up. In my opinion, a person of ordinary skill in the art would not understand either of these disclosures to describe the claimed erasable, non-volatile memory of the BIOS. I stated this opinion in my Previous Declaration in paragraph 74. I also set forth further analysis of the “agent” in paragraphs 86-89 of my Previous Declaration.

12. To the extent that Mr. Jestice opines that the claimed “agent” refers to software generally, I agree. I also agree with Mr. Jestice to the extent he understands that the term “program” in the claimed “verify the program” refers to a different software routine than the term “agent.”

13. Mr. Jestice contends that the claimed agent “has a definite structure as a software routine as claimed in the ’941 patent.” Jestice at ¶6. I disagree. The word “agent” does not appear

in the ’941 patent specification at all, as I explained in my Previous Declaration at paragraph 87. Moreover, Mr. Jestice does not identify any software routine at all.

14. The first example Mr. Jestice identifies refers the ’941 patent at 1:65-2:4. Jestice at ¶7. Mr. Jestice says that “modification, removal of data in the erasable, non-volatile memory of the BIOS can be performed ‘using E^2PROM manipulation commands.’” However, “using E^2PROM manipulation commands” does not refer to any specific software routine. Mr. Jestice acknowledges this by stating that “Such commands *are encoded in a software routine* and are well-known to those skilled in the art.” *Id.* The commands themselves are not the software routine. They are merely the fundamental building blocks. A person of ordinary skill would need to combine those building blocks to create a software routine. In other words, a person of ordinary skill in the art would need to know the specific E^2PROM manipulation commands used in a specific software routine. Even if the commands used were provided, this still does not disclose an algorithm which would require the specific sequence of E^2PROM manipulation commands and the intervening logic. The Patentee omitted any software routine from the specification. At most, the “using E^2PROM manipulation commands” suggests that a person of ordinary skill in the art would need to look to a document other than the specification or develop their own algorithm from the commands. The specification does not identify any particular document for a person of ordinary skill to consider.

15. Mr. Jestice further opines that “Such commands … are well-known to those skilled in the art.” But, the Patentee said otherwise in the prosecution history. In an Office Action Response dated Feb. 5, 2002, Patentee explained “the present invention proceeds against conventional wisdom in the art.” Feb. 5, 2002 Response to Office Action at 5. The patentee further stated, “an ordinary person skilled in the art would not consider the BIOS for ***any operation,***

including writing to the BIOS."

16. The second example Mr. Jestice identifies refers to the "bureau." Mr. Jestice does not explain how the "bureau" relates to the claimed "agent." In my opinion, the "bureau" and the "agent" are different. Mr. Jestice opines that "agent" is software. The "bureau" is hardware. The dependent claims and specification confirm my understanding. For example, claim 3 recites "establishing, between the computer and the bureau, a two-way data communications linkage." Furthermore, the specification explains, "The bureau is a telecommunications accessible processor where functions such as formatting, encrypting, and verifying may be performed." '941 patent at 3:42-44. Note that it is the bureau performing these functions and not the agent. I further understand that both parties proposed constructions of "bureau" as a "telecommunications processor." Dkt. 58-1 (Appendix to Joint Claim Construction Statement) at 18. Such a "telecommunications accessible processor" capable of a "two-way data communications linkage" is hardware. It is not an "agent" algorithm.

17. Mr. Jestice seems to acknowledge the lack of disclosure of an algorithm later in his declaration by referring to a Beeble whitepaper. Jestice at ¶14. I note that the whitepaper is marked confidential and is dated September 2001, several years after the filing date of the '941 patent, or the foreign priority application. The whitepaper does not provide evidence of the level of ordinary skill at the time of the invention.

18. Mr. Jestice further contends that the dictionary definitions cited in paragraph 13 of his declaration establish that "agent" is well-understood as "a software program or routine." None of these definitions provide an algorithm or routine. In my opinion, a person of ordinary skill in the art at the time of the invention would understand an "agent" to refer to software generally rather than any particular algorithm or routine.

19. I declare that all statements made herein of my knowledge are true, and that all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Dated: 9/4/2019 By: _____

Jon B. Weissman

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Appendix A

JON B WEISSMAN

CURRICULUM VITAE
August 6, 2019

Work Address:
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EDUCATION

Ph.D., Computer Science, University of Virginia, 1995.

M.S., Computer Science, University of Virginia, 1989.

B.S., Applied Mathematics and Computer Science, Carnegie-Mellon University, 1984.

PROFESSIONAL EXPERIENCE

Professor, Computer Science	Univ. of Minnesota (Summer 2012 to date)
Associate Professor, Computer Science	Univ. of Minnesota (Fall 2003 to Spring 2012)
Visiting Researcher and Distinguished Visitor	National e-Science Center, University of Edinburgh (2007-2008)
Assistant Professor, Computer Science	Univ. of Minnesota (1999-2003)
Assistant Professor, Computer Science	Univ. of Texas San Antonio (1995-1999)
Member of Technical Staff	Mitre Corporation, McLean Virginia (1989-1991)
Software Engineer	Software A&E, Arlington Virginia (1984-1987)

PROFESSIONAL ACTIVITIES

Tau Beta Engineering Honor Society, Member ACM, IEEE Senior Member

ACADEMIC AWARDS AND HONORS

- **Best paper nominee**, IEEE International Conference on Cloud Engineering (IC2E) 2015.
- **Best paper**, IEEE Grid conference, 2009.
- **Honorary Fellow**, College of Science and Engineering, University of Edinburgh, 2007-2008.
- **IEEE Senior Member**, promoted 2003.
- **Success Story**, ARL HPC (HPCMO), Virtual Data Grid Project, 2002.
- **CAREER Award**, National Science Foundation, 1996.
- **Supercomputing Award** for "High-Performance Computing with Legion", SC, 1995.
- **Teaching Award**, University of Virginia Teaching Medal of Excellence, 1995.

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LITIGATION SUPPORT EXPERIENCE

Testifying Expert

- client: Fenwick & West LLP, case: PersonalWeb vs. Amazon, area: cloud, data storage, project: patent analysis, expert reports, represented: defense, status: active, 2019.
- client: Jenner & Block LLP, case: Kove IO, Inc., vs. Amazon Web Service, area: cloud, data storage, project: patent analysis, expert reports, represented: defense, status: active, 2019.
- client Cooley LLP, case: Zak Inc vs. Facebook, area: web, project: patent analysis, expert reports, represented: defense, status: active, 2019.
- client Cooley LLP, case: Blackberry Inc vs. Facebook, area: mobile computing, project: patent analysis, expert reports, represented: defense, status: active, 2019.
- client: Faegre Baker Daniels LLP, case: ICN Acquisition, LLC vs. ipDataTel, LLC, area: home alarm systems and networks, IPR declarations, represented: petitioner status: settled prior to trial, 2019.
- client: Cooley LLP, case: Vaporstream Inc vs. Snapchat Inc, area: mobile computing, project: patent analysis, expert reports, *deposition*, represented: defense, status: stay, 2018.
- client: Fenwick & West LLP, case: IBM vs. Groupon, area: security, web, client-server, project: patent analysis, expert reports, *deposition*, **testifying**, represented: defense, status: finished, 2017-2018.
- client: DLA Piper LLP, WORKSPOT, Inc. vs. CITRIX SYSTEMS, INC., area: security, IPR declaration, *deposition*, represented: petitioner, status: active.
- client: Keker, Van Nest & Peters LLP, BMC SOFTWARE, INC., vs. CHERWELL SOFTWARE, LLC, area: software systems, IPR declaration, represented: petitioner, status: active.
- client: Cooley LLP, case: Sound View Inc vs. Facebook, area: databases, web, project: patent analysis, expert reports, *deposition*, represented: defense, status: settled, 2018.
- client: Fenwick & West LLP, case: IBM vs. Groupon vs. IBM, area: security, IPR declaration, represented: patent owner, status: finished, 2017.
- client: Finnegan, Henderson, Farabow, Garrett & Dunner, LLP, area: Internet applications, IPR declaration, represented: petitioner, status: finished, 2017. No associated litigation.
- client: McDonnell Boehnen Hulbert & Berghoff LLP, case: Trading Technologies Inc., area: distributed systems, project: Patent Examination, declaration, represented: patent owner, status: finished, **examiner interview**, 2016.
- client: Fenwick & West LLP, case: Actifio vs. Delphix, area: cloud storage, project: patent analysis, expert reports, represented: defense, status: finished (settled prior to trial), 2016.
- client: Fisch Sigler LLP, case: Kaavo vs. Amazon and Tier3, area: cloud computing, IPR declarations, *deposition*, represented: petitioner, status: finished, 2016.
- client: Morrison and Foerster LLP, case: Ancora vs. Apple Inc, area: security, CBM declaration, represented: petitioner, status: finished (settled prior to trial), 2016.
- client: Finnegan, Henderson, Farabow, Garrett & Dunner, LLP, area: mobile computer systems, 3 IPR declarations, *two depositions*, represented: petitioner, status: finished, 2016. No associated litigation.
- client: Cooley LLP, case: BMC Inc vs. ServiceNow Inc, area: computer systems, project: patent analysis, expert reports, *deposition*, represented: defense, status: finished (settled prior to trial), 2016.
- client: Fish & Richardson P.C., case: Ericsson Inc vs. Apple Inc, area: mobile systems, project: patent analysis, represented: defense, status: finished, 2015.

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- client: Morrison and Foerster LLP, case: Good Technology Inc vs. Airwatch Inc, area: mobile systems, project: patent analysis, 3 expert reports, *deposition*, represented: defense, status: finished (settled prior to trial), 2015.
- client: Troutman Sanders, Intellectual Ventures I LLC vs. Capitol One Financial Corp, claim construction declarations, area: mobile interfaces, represented: defense, status: finished, 2015.
- client: Bryan Cave LLP, case: Symantec vs. Veeam Software Corporation, area: storage systems, IPR declaration, *deposition*, represented: patent owner, status: finished, 2014.
- client: Finnegan, Henderson, Farabow, Garrett & Dunner, LLP, case: Clouding IP vs. Rackspace, area: storage systems, project: patent analysis, IPR and CBM declarations, *two depositions*, represented: petitioner, status: finished, 2014.
- client: Sidley Austin LLP, case: Motorola vs. Microsoft, area: mobile instant messaging, project: software patent analysis, expert reports, *deposition*, represented: defense, status: finished (settled prior to trial), 2011-2012.
- client: Baker & McKenzie LLP, case: WMR e-PIN vs. Wells Fargo, area: Internet e-commerce applications, project: software, patent analysis, expert reports, *deposition*, **testifying**, represented: defense, status: closed, 2008-2009.

Consulting Expert

- client: William G. Osborne, Esq., Superior Edge vs. Monsanto, area: distributed software, project: code analysis, report, represented: plaintiff, status: closed, 2015.
- client: Arnold & Porter LLP, Rosebud v. Adobe, area: distributed software, project: patent analysis, represented: defense, status: closed, 2015.
- client: Jones Day, Summit 6 vs. Apple, area: web technologies, project: patent analysis, represented: defense, status: closed, 2014.
- client: Ropes & Gray LLP, case: Parallel Iron vs. EMC, area: storage systems, project: patent analysis, represented: defense, status: closed, 2012-2013.
- client: Bridges & Mavrakakis LLP, case: Nokia/HTC vs. Apple, area: operating systems, project: software, patent analysis, represented: defense, status: closed, 2011.

Professional references

- Larissa Bifano: (DLA Piper): www.dlapiper.com/en/us/people/b/bifano-larissa/
- Timothy Sullivan: (Faegre Baker Daniels LLP): www.faegrebd.com/en/professionals/s/sullivan-timothy-m
- Phil Haack: (Fenwick & West LLP): www.fenwick.com/professionals/pages/philliphaack.aspx
- Priya Viswanath: (Cooley LLP): www.cooley.com/pviswanath
- Diek Van Nort (Morrison & Foerster LLP): www.mofo.com/people/v/van-nort-diek-o
- Joshua Goldberg (Finnegan LLP): http://www.finnegan.com/
- Jeffrey Totten (Finnegan LLP): http://www.finnegan.com/JeffreyTotten/

MAJOR RESEARCH AFFILIATIONS

1. **Distributed Computing Systems Group, University of Minnesota, Founder and Co-Director.**. The Distributed Computing Systems Group (DCSG) is collection of faculty and students working on topics in parallel and distributed computing, Internet/Web, mobile, cloud, edge, IoT, big data and machine learning. Cross-cutting topics include storage, networking, operating systems/middleware, security, and applications. Research centers on system building with a focus on resource management, efficiency, reliability, and enabling newly emerging applications.

2. **Digital Technology Center, University of Minnesota, Investigator**. The Digital Technology Center (DTC)'s goal is to create, promote, and coordinate cooperative interdisciplinary advanced technology initiatives between University, government, industry, and to serve as a point of entry into research and development partnerships with various partners. The DTC is a hub of innovation and excellence at the University of Minnesota in the digital technologies serving the industrial, educational, and public needs of the state of Minnesota and the nation. The DTC integrates research, education, and outreach in digital design, computer graphics and visualization, telecommunications, intelligent data storage and retrieval systems, multimedia, datamining, scientific computation, and other digital technologies. See `dcsg.cs.umn.edu` for details.

3. **CRIS:Center for Research in Intelligent Storage, University of Minnesota, Investigator**. The Center for Research in Intelligent Storage (CRIS) is a partnership between universities and industry, featuring high-quality, industrially relevant fundamental research, strong industrial support of collaboration in research and education, and direct transfer of university developed ideas, research results, and technology to U.S. industry. Research areas include storage and memory technologies, big data, cloud computing, backup/restore, data deduplication, and file systems. See `cris.cs.umn.edu`.

GRANT FUNDING

1. **Co-Principal Investigator**, CSR: Small: Location, location, location (L3): Support for Geo-Centric Applications, NSF, 2016-2019, $528K (PI Chandra).

2. **Co-Principal Investigator**, II-NEW: One Cloud Does Not Fit All: Minnesota Integrated cloud Systems research Testbed (MIST), NSF, 2013-2016, $350K, (PI DU, co-PIs Chandra, Zhang).

3. **Principal Investigator**, An Integrated Middleware Framework to Enable Extreme Collaborative Science, DOE, 2012-2015, $342K UMn share, collaborative with Rutgers and University of Chicago.

4. **Principal Investigator**, CSR: Medium: Enriching Mobile User Experience Through The Cloud, NSF, 2012-2015, $700K (co-PI Chandra, Karypis).

5. **Principal Investigator**, DC: Small: One Thousand Points of Light: Accelerating Data-Intensive Applications By Proxy, NSF, 2009-2012, $482K, including REU supplement $36K (co-PI Chandra).

6. **Co-Investigator**, Collaborative Research: A Multi-University I/UCRC Center on Intelligent Storage, NSF, 2009-2014, $400K, (DU PI, many co-PIs).

7. **Principal Investigator**, Grid Computing for E-Science, National E-Science Centre, University of Edinburgh, 2007-2008, $52K.

8. **Co-Investigator**, ePCRN: Electronic Primary Care Research Network, NIH Roadmap, 2006-2008, $50K (CSE share annual), (Peterson PI, Delaney PI, several co-investigators).

9. **Co-Principal Investigator**, ITR: A Data Mining and Exploration Middleware for Grid and Distributed Computing, NSF ITR, 2003-2007, $1.5M, (Kumar PI, Weissman co-PI).

10. **Investigator**, Intelligent Storage Consortium, DTC, 2003-2009, $250K (Du PI, Weissman, Lilja, Tewfik, Kim co-PIs).

11. **Investigator**, MRI: Development of a System for Interactive Analysis and Visualization of Multi-Terabyte Datasets, NSF MRI, 2004-2006, $300K (Woodward PI).

12. **Contributor**, NIH NCRR, Intelligent Data Storage Support for Microarray data, equipment, (Mayo Clinic PI, with Du), 2004, $222K.

13. **Co-Principal Investigator**, Intelligent Storage Consortium - Engenio, Engenio Information Technologies, 2004-2005, $45K, (Du PI, Weissman co-PI).

14. **Principal Investigator**, Making Parallel Computing Easy, Department of Energy (Office of Advanced Scientific Computing Research), 2002-2007, $250K, sole PI.

15. **Principal Investigator**, A Framework for Adaptive Grid Services, NSF ACR-CNS, 2003-2008, $240K, sole PI.

16. **Principal Investigator**, Towards Community Services: Putting Parallel Network Services On-line, NSF EIA-NGS Program, 2002-2003, $30K, sole PI.

17. **Co-Principal Investigator**, Collaborative Data Analysis and Visualization, NSF EIA Research Resources (Collaborative Research), 2002-2005, $500K (incl. 2 RA's shared with Du), (Woodward PI, Weissman, Du, Retzel, Wetherby co-PIs.)

18. **Investigator**, Metacomputing: Enabling Technologies and the Virtual Data Grid, Army High Performance Computing and Research Center (AHPCRC), 2000-2004, $260K, original contributor to center proposal.

19. **Principal Investigator**, Resource Management for Parallel and Distributed Systems, NSF CAREER award ACR, 1996-2001, $200K, REU supplement $5K (2000), sole PI.

20. **Principal Investigator**, Smart File Objects: An Application-directed File Access Paradigm, Texas Advanced Research Program ARP-010115-226, 1997-2000, $106K, sole PI.

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21. **Participant**, Telecommunication Networks for Mobile and Distributed Computing and Communications, AFOSR-F49620-96-1-0472, 1996-2000, $2M, (PI Hiromoto).

22. **Co-Principal Investigator**, Building a Pipeline for Minority Scholars, NSF CISE MI-I CDA-9633299, 1996 - 1999, $1.3M. (Hiromoto PI, Weissman, Das, Boppana, Psarris, Jeffery, Rosen co-PIs).

23. **Fellowship**, Applying Parallel Object-Oriented Computing to Scientific Applications, NASA Graduate Student Researchers Program Fellowship, Jet Propulsion Laboratory, 1991-1995, $66K.

PUBLICATIONS

Journal Articles: for up-to-date-list, see www.cs.umn.edu/˜jon

1. Albert Jonathan, Mathew Ryden, Kwangsung Oh, Abhishek Chandra, and **Jon Weissman**, Nebula: Distributed Edge Cloud for Data Intensive Computing, *IEEE Transactions on Parallel and Distributed Systems*, Vol. 28, No. 11, Nov 2017.

2. Benjamin Heintz, Abhishek Chandra, Ramesh Sitaraman, and **Jon B. Weissman**, End-to-end Optimization for Geo-Distributed MapReduce, *IEEE Transactions on Cloud Computing*, Vol. 4, No. 3, July 2016.

3. Jinoh Kim, Seonho Kim, and **Jon B. Weissman**, A Security-enabled Grid System for MINDS Distributed Data Mining, *Journal of Grid Computing*, 2014.

4. Murray Cole, Shantenu Jha, Daniel S. Katz, Manish Parashar, Omer Rana, and **Jon B. Weissman**, Distributed Computing Practice for Large-Scale Science and Engineering Applications, *Concurrency: Practice and Experience*, Volume 25, Issue 11, September 2013.

5. Adam Barker, **Jon B. Weissman**, Jano van Hemert, Accelerating Service-Oriented Workflows, *IEEE Transactions on Services Computing*, 5(3), 2012.

6. Jinoh Kim, Abhishek Chandra and **Jon B. Weissman**, Passive Network Performance Estimation for Large-scale, Data-intensive Computing, *IEEE Transactions on Parallel and Distributed Systems*, 22(8), August 2011.

7. Jia Jingxi, Bharadwaj Veeravalli, and **Jon B. Weissman**, Scheduling Multi-source Divisible Loads on Arbitrary Networks, *IEEE Transactions on Parallel and Distributed Systems*, 21(4), April 2010.

8. Jinoh Kim, Abhishek Chandra and **Jon B. Weissman**, Using Data Accessibility for Resource Selection in Large-scale Distributed Systems, *IEEE Transactions on Parallel and Distributed Systems*, 20(6), June 2009.

9. Byoung-Dai Lee, **Jon B. Weissman**, Young-Kwang Nam, Adaptive middleware supporting scalable performance for high-end network services, *Journal of Network and Computer Applications*, 32(3), May 2009.

10. Adam Barker, **Jon B. Weissman** and Jano van Hemert, The Circulate Architecture: Avoiding Workflow Bottlenecks Caused By Centralised Orchestration, *Journal of Cluster Computing*, 12(2), 2009.

11. Jason D. Sonnek, Abhishek Chandra, and **Jon B. Weissman**, Adaptive Reputation-Based Scheduling on Unreliable Distributed Infrastructures, *IEEE Transactions on Parallel and Distributed Systems*, 18(11), November 2007.

12. Darin England, Bharadwaj Veeravalli, and **Jon B. Weissman**, A Robust Spanning Tree Topology for Data Collection and Dissemination in Distributed Environments, *IEEE Transactions for Parallel and Distributed Systems*, 18(5), May 2007.

13. Rahul Trivedi, Abhishek Chandra, and **Jon B. Weissman**, Heterogeity-Aware Workload Distribution in Donation Based Grids, invited to the *International Journal for High Performance Computing and Applications* (IJHPCA), 20(4), 2006.

14. Darin England and **Jon B. Weissman**, A Resource Leasing Policy for On-demand Computing, invited to the *International Journal for High Performance Computing and Applications* (IJHPCA), 20(1), 2006.

15. **Jon B. Weissman**, Darin England, and Lakshman Abburi Rao, "Integrated Scheduling: The Best of Both Worlds," *Journal of Parallel and Distributed Computing*, 63(6), 2003.

16. **Jon B. Weissman** and Byoung-Dai Lee, "The Virtual Service Grid: An Architecture for Delivering High-End Network Services", *Concurrency: Practice and Experience*, Vol. 14, No. 4, April 2002.

17. **Jon B. Weissman**, "Predicting the Cost and Benefit of Adapting Parallel Applications in Clusters", *Journal of Parallel and Distributed Computing*, Vol. 62, No. 8, August 2002.

18. **Jon B. Weissman**, Mike Gingras, and Mahesh Marina, "Optimizing Remote File Access for Parallel and Distributed Network Applications" *Journal of Parallel and Distributed Computing*, Vol. 61, No. 11, November 2001.

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19. **Jon B. Weissman**, "Prophet: Automated Scheduling of SPMD Programs in Workstation Networks", *Concurrency: Practice and Experience*, Vol. 11, No. 6, August 1999.

20. **Jon B. Weissman** "Gallop: The Benefits of Wide-Area Computing for Parallel Processing", *Journal of Parallel and Distributed Computing*, Vol. 54, No. 2, November 1998.

21. **Jon B. Weissman** and Xin Zhao, "Scheduling Parallel Applications in Distributed Networks," *Journal of Cluster Computing*, Vol. 1, No. 1, May 1998, invited paper.

22. Andrew S. Grimshaw, **Jon B. Weissman**, and W. Timothy Strayer, "Portable Run-time Support for Dynamic Object-Oriented Parallel Processing," *ACM Transactions on Computer Systems*, Vol. 14, No. 2, May 1996.

23. **Jon B. Weissman** and Andrew S. Grimshaw, "A Framework for Partitioning Parallel Computations in Heterogeneous Environments", *Concurrency: Practice and Experience*, Vol. 7, No. 5, August 1995.

24. Andrew Grimshaw, **Jon B. Weissman**, Emily West, and Edmond Loyot, Jr., "Metasystems: An Approach Combining Parallel Processing and Heterogeneous Distributed Computing Systems", *Journal of Parallel and Distributed Computing*, Vol. 21, No. 3, June 1994.

25. **Jon B. Weissman**, Andrew S. Grimshaw, and Robert R. Ferraro, "Parallel Object-Oriented Computation Applied to a Finite Element Problem," *Journal of Scientific Programming*, Vol. 2, No. 4, 1993.

Books and Book Chapters

1. Benjamin Heintz, Abhishek Chandra and **Jon Weissman**, Cross-Phase Optimization in MapReduce, in Cloud Computing for Data-Intensive Applications, Springer, 2014.

2. **Jon B. Weissman** and Jinoh Kim, Network Awareness in Volunteer Networks, in Desktop Grid Computing, CRC Press, 2013.

3. Steve Chapin and **Jon B. Weissman**, Distributed and Multiprocessor Scheduling (Operating Systems Area), The Computer Science and Engineering Handbook, 2004.

Highly Selective Articles: : for up-to-date-list, see www.cs.umn.edu/˜jon

1. Zach Leidall, Abhishek Chandra, **Jon Weissman**, An Edge-based Framework for Cooperation in Internet of Things Applications, 2nd USENIX Workshop on Hot Topics in Edge Computing (HotEdge), Renton, Washington, July 2019.

2. Albert Jonathan, Abhishek Chandra, and **Jon Weissman**, Multi-Query Optimization in Wide-Area Streaming Analytics, *ACM Symposium on Cloud Computing 2018 (SOCC)*, Carlsbad, California, October 2018.

3. Feng Liu, Kate Keahey, Pierre Riteau, and **Jon Weissman**, Dynamically Negotiating Capacity between On-Demand and Batch Clusters, *International Conference for High Performance Computing, Networking, Storage, and Analysis (SC'18)*, Nov 2018, Dallas, TX.

4. Albert Jonathan, Abhsishek Chandra, and **Jon B. Weissman**, Rethinking Adaptability in Wide-Area Stream Processing Systems, *Workshop on Hot Topics in Cloud Computing* (HotCloud '18), June 2018.

5. Kwangsung Oh, Abhishek Chandra and **Jon Weissman**, TripS: Automated Multi-tiered Data Placement in a Geo-distributed Cloud Environment, *10th ACM International Systems and Storage Conference* (SYSTOR), May 2017, Haifa Israel.

6. Kwangsung Oh, Abhishek Chandra, and **Jon Weissman**, Wiera: Towards Flexible Multi-Tiered Geo-Distributed Cloud Storage Instances, *25th IEEE International Symposium on High Performance Distributed Computing (HPDC)*, June 2016, Kyoto, Japan.

7. Matteo Turilli, Feng Liu, Zhao Zhang, Andre Merzky, Michael Wilde, **Jon Weissman**, Daniel S. Katz, and Shantenu Jha, Integrating Abstractions to Enhance the Execution of Distributed Applications, *30th IEEE International Parallel & Distributed Processing Symposium (IPDPS)*, May 2016, Chicago, Il.

8. Albert Jonathan, Abhishek Chandra, and **Jon Weissman**, Awan: Locality-aware Resource Manager for Geo-distributed Data-intensive Applications, *IEEE International Conference on Cloud Engineering*, April 2016, Berlin, Germany.

9. Francis Liu and **Jon Weissman**, Elastic Job Bundling: An Adaptive Resource Request Strategy for Large-Scale Parallel Applications, to appear in the *International Conference for High Performance Computing, Networking, Storage, and Analysis (SC'15)*, Nov 2015, Austin, TX.

10. John Kolb, Prashant Chaudhary, Alexander Schillinger, Abhishek Chandra and **Jon Weissman**, Cloud-Based, User-Centric Mobile Application, *IEEE International Conference on Cloud Engineering*, March 2015, Tempe, AZ.

11. Ajaykrishna Raghavan, Abhishek Chandra, and **Jon B. Weissman**, Tiera: Towards Flexible Multi-Tiered Cloud Storage Instances, *ACM Middleware*, 2014.

12. John Kolb, Will Myott, Thao Nguyen, Abhishek Chandra and **Jon B. Weissman**, Exploiting User Interest in Data-Driven Cloud-based Mobile Optimization, *IEEE Conference on Mobile Cloud Computing*, April 2014, Oxford, UK

13. Mathew Ryden, Kwangsung Oh, Abhishek Chandra and **Jon B. Weissman**, Nebula: Distributed Edge Cloud for Data Intensive Computing, *IEEE International Conference on Cloud Engineering*, March 2014, Boston, MA

14. Abhishek Chandra, **Jon Weissman**, and Benjamin Heintz Decentralized Edge Clouds, *IEEE Internet Computing*, 2013.

15. Benjamin Heintz, Chenyu Wang, Abhishek Chandra, and **Jon B. Weissman**, Cross-Phase Optimization in MapReduce, *IEEE International Conference on Cloud Engineering*, March 2013, San Francisco, CA

16. Chonglei Mei, Daniel Taylor, Chenyu Wang, Abhishek Chandra, and **Jon B. Weissman**, Sharing-aware Cloud-based Mobile Outsourcing *IEEE 5th International Conference on Cloud Computing*, 2012.

17. Atul Katiyar and **Jon B. Weissman**, ViDeDup: An Application-Aware Framework for Video De-duplication, *Third Usenix Workshop on Hot Topics in Storage and File Systems* (HotStorage'11), Portland, OR, June 2011.

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18. Louis-Claude Canon, Emmanuel Jeannot, and **Jon B. Weissman**, A Scheduling and Certification Algorithm for Defeating Collusion in Desktop Grids, *31st IEEE International Conference on Distributed Computing Systems* (ICDCS), Minneapolis, MN, June 2011.

19. Louis-Claude Canon, Emmanuel Jeannot, and **Jon B. Weissman**, A Dynamic Approach for Characterizing Collusion in Desktop Grids, *24th IEEE International Parallel and Distributed Processing Symposium* (IPDPS), 2010.

20. Abhishek Chandra and **Jon B. Weissman**, Nebulas: Using Distributed Voluntary Resources to Build Clouds, *Workshop on Hot Topics in Cloud Computing* (HotCloud '09), June 2009.

21. **Jon B. Weissman** and Siddharth Ramakrishnan, Using Proxies to Accelerate Cloud Applications, *Workshop on Hot Topics in Cloud Computing* (HotCloud '09), June 2009.

22. Adam Barker, **Jon B. Weissman** and Jano van Hemert, Eliminating the Middle-Man: Peer-to-Peer Dataflow, *17th IEEE International Symposium on High Performance Distributed Computing* (HPDC), Boston, MA, June 2008.

23. Jinoh Kim, Abhishek Chandra and **Jon B. Weissman**, Accessibility-based Resource Selection in Loosely-coupled Distributed Systems, *28th IEEE International Conference on Distributed Computing Systems* (ICDCS), Beijing, China, June 2008.

24. Krishnaveni Budati, Abhishek Chandra, and **Jon B. Weissman**, RIDGE: Combining Reliability and Performance in Open Grid Platforms, *16th IEEE International Symposium on High Performance Distributed Computing* (HPDC), June 2007.

25. Jason D. Sonnek, Mukesh Nathan, Abhishek Chandra, and **Jon B. Weissman**, Reputation Based Scheduling on Unreliable Distributed Infrastructures, *The 26th International Conference on Distributed Computing Systems* (ICDCS), July 2006.

26. Darin England, Jayashree Sadagopan, and **Jon B. Weissman**, A New Metric for Robustness with Application to Job Scheduling, *Fourteenth IEEE International Symposium on High Performance Distributed Computing* (HPDC), 2005.

27. **Jon B. Weissman** and Xin Zhao, "Run-time Support for Scheduling Parallel Applications in Heterogeneous NOWs," *Proceedings of the Sixth IEEE International Symposium on High Performance Distributed Computing* (HPDC), August 1997.

28. **Jon B. Weissman** and Andrew S. Grimshaw, "A Federated Model for Scheduling in Wide-Area Systems," *Proceedings of the Fifth IEEE International Symposium on High Performance Distributed Computing* (HPDC), August 1996.

29. **Jon B. Weissman** and Andrew S. Grimshaw, "Network Partitioning of Data Parallel Computations," *Proceedings of the Third IEEE International Symposium on High Performance Distributed Computing* (HPDC), August 1994.

Selective Articles: : for up-to-date-list, see www.cs.umn.edu/˜jon

30. Albert Jonathan, Abhishek Chandra, and **Jon Weissman**, Locality-Aware Load Sharing in Mobile Cloud Computing *IEEE/ACM International Conference on Utility and Cloud Computing*, 2017.

31. Albert Jonathan, Abhishek Chandra, and **Jon Weissman**, Ensuring Reliability in Geo-Distributed Edge Cloud, *IEEE RWS* (Resilience Week), Wilmington, Delaware, 2017.

32. Kwangsung Oh, Ajaykrishna Raghavan, Abhishek Chandra and **Jon Weissman**, Redefining Data Locality for Cross-Data Center Storage, *International Workshop on Software-Defined Ecosystems* (BigSystem 2015), June 2015, Portland, OR.

33. William Myott, Thao Nguyen, Abhishek Chandra, George Karypis, and **Jon B. Weissman**, Opportunities for Data-Driven Cloud-based Mobile Optimization, invited to 2014 *International Conference on Collaboration Technologies and Systems*, Minneapolis, MN, May 2014.

34. Siddharth Ramakrishna, Robert Reutiman, Abhishek Chandra, and **Jon B. Weissman**, Accelerating Distributed Workflows With Edge Resources, *Second International Workshop on Workflow Models, Systems, Services and Applications in the Cloud (CloudFlow)*, Boston MA, May 2013.

35. Mike Cardosa, Anshuman Nangia, Chenyu Wang, Abhishek Chandra and **Jon B. Weissman**, Exploring MapReduce Efficiency with Highly-Distributed Data, *The Second International Workshop on MapReduce and its Applications* (MapReduce '11), June 2011.

36. Pradeep Sundarrajan, Abhishek Gupta, Matthew Ryden, Rohit Nair, Abhishek Chandra, and **Jon B. Weissman**, Early Experience with the Distributed Nebula Cloud, *The Fourth International Workshop on Data Intensive Distributed Computing* (DIDC '11), June 2011.

37. Shantenu Jha, Daniel S. Katz, Manish Parashar, Omer Rana, and **Jon B. Weissman**, Critical Perspectives on Large-Scale Distributed Applications and Production Grids, *10th IEEE/ACM Conference on Grid Computing* (Grid 2009), Banff, Canada, 2009, winner best paper award.

38. Adam Barker, Paolo Besanay, David Robertson, and **Jon B. Weissman**, The Benefits Of Service Choreography For Data-Intensive Computing, *Proceedings of the 2009 Workshop in Challenges of Large Applications in Distributed Environments* (CLADE), 2009.

39. Adam Barker, **Jon B. Weissman** and Jano van Hemert, Orchestrating Data-centric Workflows, *IEEE/ACM CCGrid International Symposium on Cluster Computing and the Grid* (CCGrid), Lyon, France, May 2008.

40. Vasumathi Sundaram, Abhishek Chandra and **Jon B. Weissman**, Exploring the Throughput-Fairness Tradeoff of Deadline Scheduling in Heterogeneous Computing Environments, *Proceedings of the ACM International Conference on Measurement and Modeling of Computer Systems* (SIGMETRICS), short paper, Annapolis, MD, June 2008.

41. Krishnaveni Budati, Jinoh Kim, Abhishek Chandra and **Jon Weissman**, NGS: Service Adaptation in Open Grid Platforms, *Proceedings of the IPDPS NSF Next Generation Software Workshop*, March 2007.

42. **Jon B. Weissman**, Vipin Kumar, Varun Chandola, Eric Eilertson, Levent Ertoz, Gyorgy Simon, Seonho Kim, and Jinoh Kim, DDDAS/ITR: A Data Mining and Exploration Middleware for Grid and Distributed Computing, *Workshop on Dynamic Data Driven Application Systems - DDDAS 2007*, Beijing, China, May 2007.

43. Jinoh Kim, Abhishek Chandra, and **Jon B. Weissman**, Exploiting Heterogeneity for Collective Data Downloading in Volunteer-based Networks, *IEEE/ACM CCGrid International Symposium on Cluster Computing and the Grid* (CCGrid), 2007.

44. **Jon B. Weissman**, Seonho Kim, and Darin England, A Framework for Dynamic Service Adaptation in the Grid, *Proceedings of the IPDPS NSF Next Generation Software Workshop Denver*, Colorado, April 2005.

45. Jason D. Sonnek and **Jon B. Weissman**, A Quantitative Comparison of Reputation Systems in the Grid, *6th IEEE/ACM International Workshop on Grid Computing* (GRID).

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46. **Jon B. Weissman**, Seonho Kim, and Darin England, Supporting the Dynamic Grid Service Lifecycle, *IEEE/ACM CCGrid International Symposium on Cluster Computing and the Grid* (CCGrid), 2005.

47. Darin England and **Jon B. Weissman**, "A Stochastic Control Model for the Deployment of Dynamic Grid Services", *5th IEEE/ACM International Workshop on Grid Computing* (GRID), 2004.

48. Darin England and **Jon B. Weissman**, "A Load Sharing Model for the Computational Grid," *Workshop on Job Scheduling Strategies for Parallel Processing* (JSSPP) with Sigmetrics 2004.

49. Seonho Kim and **Jon B. Weissman**, "A GA-based approach for scheduling decomposable data grid applications," *International Conference on Parallel Processing* (ICPP) 2004.

50. Byoung-Dai Lee and **Jon B. Weissman**, "Adaptive Resource Selection for Grid-enabled Network Services," *IEEE 2nd International Symposium on Network Computing and Applications* (NCA), 2003.

51. Byoung-Dai Lee and **Jon B. Weissman**, "Adaptive Resource Scheduling for Network Services," *IEEE 3rd International Workshop on Grid Computing*, 2002.

52. Byoung-Dai Lee and **Jon B. Weissman**, "Community Service Toolkit for Rapid Deployment of Network Services," *IEEE 2002 Workshop on Cluster Computing*, 2002.

53. **Jon B. Weissman** and Pramod Srinivasan, "Ensemble Schedulng: Resource Co-Allocation on the Computational Grid", *IEEE 2nd International Workshop on Grid Computing* (GRID), November 2001.

54. Byoung-Dai Lee and **Jon B. Weissman**, "An Adaptive Service Grid Architecture for Dynamic Replication," *IEEE 2nd International Workshop on Grid Computing* (GRID), November 2001.

55. **Jon B. Weissman** and Byoung-Dai Lee, "The Service Grid: Supporting Scalable Heterogenous Services in Wide-Area Networks," *The IEEE 2001 Symposium on Applications and the Internet* (SAINT), January 2001.

56. **Jon B. Weissman**, "Scheduling Multi-Component Applications in Heterogeneous Wide-area Networks," *Heterogeneous Computing Workshop*, International Parallel and Distributed Processing Symposium, May 2000.

57. **Jon B. Weissman**, "Fault Tolerant Wide-Area Parallel Computing," *IEEE Workshop on Fault-Tolerant Parallel and Distributed Systems*, International Parallel and Distributed Processing Symposium, May 2000.

58. Mike Gingras and **Jon B. Weissman**, "Smart Multimedia File Objects," *IEEE Workshop on Internet Applications* (WIA), July 1999.

59. **Jon B. Weissman**, "Smart File Objects: A Remote File Access Paradigm," *Sixth ACM Workshop on I/O in Parallel and Distributed Systems* (IOPADS), May 1999.

60. **Jon B. Weissman**, "The Interference Paradigm for Network Job Scheduling," *Heterogeneous Computing Workshop*, Tenth International Parallel and Distributed Processing Symposium, April 1996.

61. **Jon B. Weissman**, Andrew S. Grimshaw, and Robert R. Ferraro, "Parallel Object-Oriented Computation Applied to a Finite Element Problem," *Object-Oriented Numerics*, 1993.

62. Lisa Sokol, **Jon B. Weissman**, and Paula Mutchler, "The Role of Event Granularity in Parallel Simulation Design," *Proceedings of the Parallel and Distributed Simulation Conference* (PADS), 1992.

63. Richard Weatherly, David Seidel, and **Jon B. Weissman**, "Aggregate Level Simulation Protocol," *Proceedings of the 1991 Summer Computer Simulation Conference*, July 1991.

64. Lisa Sokol, **Jon B. Weissman**, and Paula Mutchler, "An Empirical Comparison of MTW and Time Warp in a Shared Memory Environment," *Proceedings of the SCS Multiconference on Work in Progress (WSMC)*, January 1991.

65. Lisa Sokol, **Jon B. Weissman**, and Paula Mutchler, "MTW: An Empirical Performance Study," *Proceedings of the Winter Simulation Conference (WSC)*, December 1991.

Short Papers

1. Zach Leidall, Abhishek Chandra, **Jon Weissman** Creating an Abstraction to Exploit IoT Synergies, *2nd ACM/IEEE International Conference on Internet-of-Things Design and Implementation* (IoTDI 2017), Extended Abstract/Poster, April 2017.

2. Arvanitis TN, Taweel A, Zhao L, Delaney BC, Peterson KA , Speedie SM, Sim I, **Weissman J**, Fontaine P, Lange C, Janowiec M, and Stone J, Supporting e-trials over distributed networks: a tool for capturing randomised control, *MEDNET* 2007.

3. Seonho Kim, **Jon B. Weissman**, Kevin A. Peterson, A Secure Federated Health Data Query System for Primary Care Clinical Trials on the Grid, *2007 Annual Meeting NIH Cancer Grid* (CABig), February 2007.

4. Speedie SM, Peterson K, Fontaine P, **Weissman J**, Delaney B, Arvanitis T, Taweel A, Sim I, Lange C, Janowiec M, Stone J, Wolff, A., An Infrastructure for Conducting Clinical Trials in Primary Care. "Current Issues in Clinical Research: Latest Trends in Clinical Research" (abstract) October 4-5, 2006, Minneapolis, MN.

5. Rahuk Trivedi, Abhishek Chandra, and **Jon B. Weissman**, Platform-of-Platforms: A Modular Integrated Resource Framework for Large-Scale Services, *2nd Symposium on Networked System Design and Implementation* (NSDI), 2005, (poster paper).

6. **Jon B. Weissman** and Zhi-li Zhang, "Smart Environments: Middleware Building Blocks for Pervasive Network Computing," *NSF workshop on Infrastructure for Mobile and Wireless Systems*, Springer-Verlag Research Notes, 2003.

7. Byoung-Dai Lee and **Jon B. Weissman**, "Dynamic Replica Management in the Service Grid," *10th IEEE International Symposium on High Performance Distributed Computing* (HPDC), August 2001.

8. Mike Karo, Christopher Dwan, John Freeman, **Jon B. Weissman**, Miron Livny, and Ernest Retzel, "Appyling Grid Technology to Bioinformatics", with Mike Karo et. al, *10th IEEE International Symposium on High Performance Distributed Computing* (HPDC), August 2001.

9. **Jon B. Weissman**, "Fault Tolerant Computing on the Grid: What are my options?," *Eighth IEEE International Symposium on High Performance Distributed Computing* (HPDC), August 1999.

10. **Jon B. Weissman**, "Metascheduling: A Scheduling Model for Metacomputing Systems," *Proceedings of the Seventh IEEE International Symposium on High Performance Distributed Computing* (HPDC), 1998.

11. Andrew Grimshaw, **Jon B. Weissman**, and Emily A. West, "Overhead versus Application Granularity in Mentat," *Proceedings of the Workshop on Efficient Implementation of Concurrent Object-Oriented Programs* (OOPSLA), Washington D.C., September, 1993, extended abstract.

12. Andrew Grimshaw, **Jon B. Weissman**, and Emily A. West, "Experiences with the Mentat Metasystems Testbed," *1992 Workshop on Cluster Computing*, December 1992, extended abstract.

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Technical Reports and Other Papers

1. Ajaykrishna Raghavan, Abhishek Chandra, and **Jon B. Weissman**, Tiera: Towards Flexible Multi-Tiered Cloud Storage Instances, University of Minnesota Computer Science TR-14-003, January 2014.

2. Mathew Ryden, Abhishek Chandra, and **Jon Weissman**, Nebula: Data Intensive Computing over Widely Distributed Voluntary Resources, University of Minnesota Computer Science TR-13-07, March 2013.

3. Chonglei Mei, Daniel Taylor, Chenyu Wang, Abhishek Chandra, and **Jon B. Weissman**, Mobilizing the Cloud: Enabling Multi-User Mobile Outsourcing in the Cloud, University of Minnesota Computer Science TR-11-029, November 2011.

4. Dan Katz, Shantenu Jha, Manish Parashar, Omer Rana, and **Jon Weissman**, Analysis of Production Distributed Computing Infrastructures, Technical Report CI-TR-7-0811. Computation Institute, University of Chicago & Argonne National Laboratory, September 2011.

5. Chonglei Mei, James Shimek, Chenyu Wang, Abhishek Chandra and **Jon Weissman**, Dynamic Outsourcing Mobile Computation to the Cloud, University of Minnesota Computer Science TR-11-006, March 2011.

6. Louis-Claude Canon, Emmanuel Jeannot, and **Jon B. Weissman**, A Scheduling Algorithm for Defeating Collusion, INRIA, Research Report RR-7403, Oct. 2010.

7. Siddharth Ramakrishnan, Robert Reutiman, Abhishek Chandra, and **Jon B. Weissman**, Standing on the Shoulders of Others: Using Proxies to Opportunistically Boost Distributed Applications, University of Minnesota Computer Science TR-10-012, 2010.

8. Siddharth Ramakrishnan, Robert Reutiman, Harlan Iverson, Shimin Lian, Abhishek Chandra, and **Jon B. Weissman**, Early Experience with Mobile Computation Outsourcing, University of Minnesota Computer Science TR-10-020, 2010.

9. Vasumathi Sundaram, Abhishek Chandra, **Jon B. Weissman**, Exploring the Throughput-Fairness Tradeoff of Deadline Scheduling in Heterogeneous Computing Environments, University of Minnesota Computer Science TR-08-003, 2008.

10. Jinoh Kim, Abhishek Chandra, and **Jon B. Weissman**, OPEN: Passive Network Performance Estimation for Data-intensive Applications, University of Minnesota Computer Science TR-08-041, 2008.

11. Seonho Kim, Jinoh Kim, and **Jon B. Weissman**, A Security-Enabled Grid Middleware for Distributed Data Mining, University of Minnesota Computer Science TR-07-001, 2007.

12. Abhishek Chandra, Rahul Trivedi, and **Jon B. Weissman**, Hosting Services on the Grid: Challenges and Opportunities, University of Minnesota Computer Science TR-05-026, 2005.

13. Lakshman Abburi Rao, **Jon B. Weissman**, MPI-based Adaptive Parallel Grid Services, University of Minnesota Computer Science TR-03-032, 2003.

14. **Jon B. Weissman**, "The Virtual Data Grid: Just-in-time Data Delivery and Data Production for HPC Applications", DOD High Performance Computing Modernization Program Success Story Book, 2002.

15. **Jon B. Weissman**, "Metacomputing Research at the AHPCRC", AHPCRC Bulletin, 2002.

16. **Jon B. Weissman** and Colin Gan, "The Virtual Data Grid: An Infrastructure to Support Distributed Data-Centric Applications," *DOD High Performance Computing Modernization Conference Program* (Users Group Conference 2002), June 2002.

17. **Jon B. Weissman**, "Grids in the Classroom," *IEEE Concurrency*, education feature, July 2000.

INVITED TALKS

(keynotes in bold)

1. Invited Talk, IUCRC Meeting, talk title: Geo-distributed Cloud Storage, May 2017.
2. Invited **Inaugural Keynote**, Open Cloud Institute, University of Texa s at San Antonio, talk title: Geo-Distributed Clouds, September 2015.
3. Invited Talk, NITRD MAGIC, talk title: AIMES: Abstractions and Integrated Middleware For Extreme-Scale Science, March 2015.
4. Invited Talk, Inria-ENS, Lyon, France, talk title: Job Shaping on the Cloud, July 2014.
5. Invited Talk, 2014 International Conference on Collaboration Technologies and Systems (CTS 2014), talk title: Opportunities for Data-Driven Cloud-based Mobile Optimization, May 2014.
6. Invited **Keynote**, NSF/ARL Workshop on Cloud Robotics: Challenges and Opportunities, Drexel University, Feb 2013.
7. Invited Panelist, HPDC, The Value of HPDC, June 2012.
8. Invited Talk, CMU, talk title: Extending Mobile Devices into the Cloud, 2012.
9. Invited Talk, Inria-PGH, talk title: TBD, June 2012.
10. Invited Talk, NSF US-China Workshop on Collaborative Software Research, talk title: TBD, 2012.
11. Invited Talk, Thomson-Reuters Inc, talk title: A Tour of MapReduce/Hadoop, 2012.
12. Invited Talk, Adventium Labs Inc, talk title: Minnesota Cloud Research, November 2011.
13. Invited Talk, Georgia Tech (Open Cirrus Summit), talk title: Expanding the Horizons of Cloud Computing Beyond the Data Center, October 2011.
14. Invited Talk, UMn CS Colloquium, talk title: Scheduling Edge Resources to Build Better Distributed Systems, October 2011.
15. Invited **Keynote**, The Fourth International Workshop on Data Intensive Distributed Computing (DIDC 2011), San Jose, California, talk title: Wide-Area Clouds, 2011.
16. Invited Talk, Microsoft, Cloud Futures Workshop, talk title: Expanding the Horizons of Cloud Computing Beyond the Data Center, June 2011.
17. Invited Talk, Inria-Grenoble, Grenoble, France, talk title: Cloud Computing Using Edge Resources, May 2011.
18. Invited Talk, Inria-sponsored Workshop Scheduling for Large Scale systems, Aussois, France, talk title: Scheduling in the Cloud, May 2011.
19. Invited Talk, UMn CS Colloquium, talk title: Cloud Computing: Research Perspectives, April 2011.
20. Invited Talk, University of Minnesota, Science & Engineering Day, talk title: Charting the Cloud Landscape, March 2011.
21. Invited Talk, NSF Workshop: The Science of Cloud Computing, talk title: Minnesota Cloud Research Vision, March 2011.
22. Invited Talk, University of Edinburgh, Informatics/CS, talk title: New Cloud Models for Distributed Dynamic Data-Intensive Programming Application Systems, November 2010.
23. Invited Talk, Inria-sponsored Workshop: Scheduling for Large Scale systems, Aussois, France, talk title: Living on the Edge: Scheduling Edge Resources Across the Cloud, May 2010.
24. Invited Talk, UMn IT Dean Series, talk title: CloudSystems@UMn, April 2010.

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25. Invited Talk, Louisiana State University, talk title: Living on the Edge: Broadening the Vision of Cloud Computing, Baton Rouge, Louisiana, March 2010.

26. Invited **Keynote**, Third Workshop on Desktop Grids and Volunteer Computing Systems (PCGrid), Rome, Italy, talk title: Cloud@Grid, 2009.

27. Invited Talk, University of Florida, Workshop on Data Mining for Biomedical Applications, talk title: Communication is Key to a Happy Marriage-Linking Biomedical Applications and the Open Grid, September 2008.

28. Invited Talk, Sabbatical lecture: University of Edinburgh, Informatics/CS, talk title: Grid Computing for E-Science, July 2008.

29. Invited Talk, University of Edinburgh, Informatics/CS, Edinburgh, talk title: Challenges in Reliable Grid Computing, July 2008.

30. Invited Talk, CLADE Workshop, Boston, MA, talk title: Scalable Computing on Open Distributed Systems, June 2008.

31. Invited **Keynote**, ASCI conference, Delft, Netherlands, talk title: Challenges in Reliable Grid Computing, June 2008.

32. Invited Talk, NeSC Science Advisory Board, talk title: Grid Computing for E-Science, May 2008.

33. Invited Talk, University of Edinburgh, Informatics/CS, NeSC Research Seminar, talk title: Harnessing Volunteer Grids, September 2007.

34. Invited Talk, University of Edinburgh, E-Science Institute Public Lecture: talk title: Decentralizing Grids, November 2007.

35. Invited Talk: Vrjie University, Amsterdam, Netherlands, talk title: The Dynamic Grid, November 2007.

36. Invited Talk, University of Edinburgh, Informatics/CS, talk title: Achieving Reliability in Open Grids, April 2007.

37. Invited Talk, University of Chicago, talk title: Achieving Reliability in Open Grids, March 2007.

38. Invited Talk, Vrjie University, Amsterdam, Netherlands, talk title: Trust-Sensitive Scheduling on the Open Grid, March 2006.

39. Invited Education Talk, UMn Institute of Technology, talk title: Recruiting Workshop talk, Winter 2006.

40. Invited Talk, Inria/NSF-sponsored Workshop: Scheduling for Large Scale distributed platforms, San Diego, California, talk title: Scheduling Challenges in Hosting Services on the Public Grid, 2005.

41. Invited Education Talk, University of Wisconsin, Eau Claire, talk title: Graduate Studies in Computer Science at the "U", 2005.

42. Invited Talk, DOE-ANL, talk title: Future Technology Challenges for Collaboration: Customizing the Grid, 2004.

43. Invited Talk, Inria/NSF-sponsored Workshop: Scheduling for Large-Scale Distributed Platforms, Aussois, France, talk title: Robust Grid Scheduling, 2004.

44. Invited Talk, Digital Technology Center, Open House, talk title: Emerging Technologies: Grid Computing, 2003.

45. Invited Talk, Minnesota IT Leadership Forum, Minneapolis, MN, talk title: Emerging Technology: Grid Computing, October 2002.

46. Invited Talk, Digital Technology Center, Grid Computing: Collaborative Opportunities within the DTC, December 2002.

47. Invited demonstration, HPDC, title: Community Services Project, July 2002.

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48. Invited Talk, University of Indiana, Argonne National Laboratory/University of Chicago, talk title: Community Services: Putting High-end Network Services On-line, University of Tennessee, University of Minnesaota, 2002.

49. Invited Talk, Dagstuhl Seminar on Management of Metacomputers," Saarbrucken, Germany, talk title: Scheduling Computational Grids: A Five-Year Retrospective, June 2001.

50. Invited Talk, UMn CS Colloquium, talk title: Turning Hype into Reality: Achieving High Performance in a Computational Grid, Fall 1999.

51. Invited Talk, North Carolina State University, Virginia Polytechnic Institute, Northwestern, Indiana University, University of Kentucky, University of Oregon, talk title: Smart File Objects, Spring 1999.

52. Invited Talk, Southwest Research Institute, San Antonio, TX, talk title: Metacomputing Systems and Tools, 1998.

53. Invited Talk, Southwest Research Institute, San Antonio, TX, talk title: Tools for Application Scheduling in Parallel and Distributed Systems, 1997.

54. Invited Talk, UT San Antonio Seminar, talk title: A Survey of Wide-Area File Systems: Issues, Challenges, and Solutions, 1997.

55. Invited Talk, National Cancer Institute, NIH, talk title: Legion: The Next Logical Step Toward a World-Wide Virtual Computer, 1995.

56. Invited Talk, Nasa Goddard, talk title: Legion: The Next Logical Step Toward a World-Wide Virtual Computer, 1995.

57. Invited Talk, Nasa Jet Propulsion Laboratory, talk title: Scheduling Parallel Computations in a Heterogeneous Environment, 1994.

58. Invited Talk, Nasa Jet Propulsion Laboratory, talk title: Multigranular Scheduling of Data Parallel Programs, Nasa Jet Propulsion Laboratory, 1993.

TEACHING

Courses Taught

University of Minnesota

- CSci 2021 Machine Organization and Architecture: 2011.
- CSci 8101 Advanced Operating Systems: 2011, 2008, 2007, 2002.
- CSci 4211 Introduction to Computer Networks: 2009.
- CSci 4061 Operating Systems: 2017, 2016, 2014, 2013, 2011, 2010, 2006, 2001.
- CSci 8980 Special Topics in Distributed Systems: 2015, 2012, 2004
- CSci 5103 Graduate Operating Systems: 2015, 2012, 2009, 2000-2005.
- CSci 5105 Introduction to Distributed Systems: 2014, 2013.
- CSci 4131/5131 Internet Programming: 2004, 2001.
- CSci 5980 Special Topics (Metacomputing): 2000.

STUDENT ADVISING

Ph.D:

- Albert Jonathan *Multi-Tenant Geo-Distributed Analytics*, 2019.
- Kwangsung Oh, *Exploiting Heterogeneous Resources in a Multi-cloud Environment*, 2019.
- Francis Liu, *Elastic Scheduling in HPC Resource Management Systems*, 2019.
- Zachary Leidall, area: Internet of Things, (WPE Spring 2019).
- Jinoh Kim, Ph.D. 2010, *Data Dissemination for Distributed Computing*
  Post-doc Lawrence Berkeley Research Lab,
  Associate Professor Texas A&M
- Darin England, Ph.D. 2006, *Robust Design for Distributed Computing Systems*, Assistant Teaching Professor, University of Minnesota.
- Byoung-Dai Lee, Ph.D. 2003, *Adaptive Middleware for High-End Network Services*
  Assistant Professor at Kyonggi University, South Korea.

MS Plan A/B/C:

- Aravind Alagiri Ramkumar, Spring 2019, Plan B
- Rohit Sinhu, Spring 2019, Plan B
- Saurabh Gupta

Graduated:

- Albert Jonathan (co-advised Chandra), Fall 2016, Plan B
- Prashant Chaudhary (co-advised Chandra), Spring 2015, Plan B
- Ajaykrishna Raghavan (co-advised Chandra), Spring 2014, Plan B
- Mathew Ryden (co-advised Chandra), Spring 2013, Plan B
- Chenyu Wang (co-advised Chandra), Spring 2012, Plan A
- Atul Katiyar, Spring 2010, Plan B
- Siddarth Ramakrishnan, Spring 2010, Plan B
- Omer Jilani, Summer 2009, Plan A-Edinburgh
- Vasumathi Sundaram, Summer 2008, Plan B
- Krishnaveni Budati, Summer 2007, Plan B
- Rahul Trivedi, Fall 2006, Plan B
- Jayashree Sadagopan, Summer 2005, Plan B
- Jason Sonnek, Summer 2005, Plan B
- Anusha Iyer, Spring 2004, Plan B
- Murali Sangubhatla, Summer 2003, Plan B
- Zhaoxin Ding, Fall 2003, Plan B

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- Lakshman Abburi, Fall 2003, Plan B
- Pramod Srinivasan, Summer 2001, Plan B

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SERVICE

Professional Service

Leadership

- General Chair, HPDC, Phoenix Arizona, 2019
- General Chair, HPDC, Washington D.C., 2017
- Co-Organizer The Science of Cyberinfrastructure: Research, Experience, Applications and Models Workshop, e-Science, 2016.
- Co-Organizer The Science of Cyberinfrastructure: Research, Experience, Applications and Models Workshop, HPDC, 2015.
- General Chair, HPDC, New York City, NY, 2013
- Local Chair, PACT, Minneapolis, MN, 2012
- Panel co-organizer and panelist, Cloud Computing, UMn Open House, 2011.
- Steering Committee Chair, HPDC, 2010-to-date.
- International Liaison Co-Chair, ICDCS, 2011.
- Co-Organizer Cloud panel, ICDCS, 2011.
- Co-Organizer Dynamic Distributed Data Programming Abstractions Workshop, HPDC, 2011.
- Member advisory board, NSF FutureGrid, 2010-to-date.
- Global Program Chair, Europar, 2009.
- Co-Organizer, NSF Workshop on Data Mining for Biomedical Applications, University of Florida, 2008.
- Co-Organizer, Distributed Programming Abstractions Workshop at E-Science Conference, 2008.
- Program Co-Chair, HPDC 2008.
- Session Chair, HPDC: 2007, 1999,
- Session Chair, GRID, 2004.
- Panel organizer, Intelligent Storage Workshop, UMn DTC, 2006.
- Publicity Chair, ICPP, 2004, 2000.
- Co-Organizer, Intelligent Storage Workshop, UMn DTC, 2004.
- Co-Organizer, Data Mining and the Grid Workshop, UMn MSI, 2003.
- Exhibits and Poster Chair, HPDC, 2003.
- Program Vice-Chair, ICPP, 2002.
- Tutorial Chair, HPDC: 2001, 2000.
- Session Chair, IPDPS 2000.

Program Committee Member

- The International ACM Workshop on Software-Defined Ecosystem (BigSystems), 2015.
- IEEE International Workshop on Cloud Analytics 2014.
- IEEE International Conference on Cloud Engineering (IC2E) 2016, 2015, 2014, 2013.
- IEEE/ACM International Symposium on High Performance Distributed Computing: 2016-1997.
- IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing: 2016, 2015, 2014, 2012, 2011, 2010, 2009, 2007, 2003.
- Europar 2014.
- 2013 IEEE International Conference on Big Data 2013.
- IEEE International Parallel and Distributed Processing Symposium 2012.
- SC 2012, 2011, 2010, 2009, 2008, 2007, 2006.
- Workshop on Job Scheduling Strategies For Parallel Processing: 2011, 2010, 2007, 2006.
- Workshop on Large-Scale, Volatile Desktop Grids: 2011, 2010, 2009, 2007.
- IEEE International Conference on Grid Computing: 2010, 2009, 2007, 2006, 2005, 2004, 2003, 2002.
- Cluster Computing and the Grid: 2011, 2010, 2009, 2007, 2003.
- Challenges of Large Applications in Distributed Environments: 2010, 2009, 2006, 2005, 2004, 2003.
- International Conference on Parallel Processing: 2009, 2005, 2004, 2003.
- International Conference on Distributed Computing Systems: 2008.
- IEEE International Conference on e-Science and Grid Technologies: 2005.
- IEEE International Conference on Services Computing: 2004.

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- Heterogeneous Computing Workshop: 2004, 2003, 2002, 2001, 2000, 1999.
- International Workshop on Active Middleare Services (Autonomic Computing): 2004, 2003, 2002.
- International Workshop on Heterogeneous and Adaptive Computing: 2003.
- International Conference on High Performance Computing: 2002.

Editorships

Current:

- Editor HPDC 1992-2012 special issue
- Editorial board: IEEE Transactions on Computers.
- Editorial board: IEEE Transactions on Parallel and Distributed Systems.
- Editorial board: Cluster Computing.