

Welcome from the IEEE CloudCom 2010 General Chair

Geoffrey C. Fox



Dear Conference Attendees:

On behalf of all of us from your host institution, Pervasive Technology Institute at Indiana University, I would like to welcome you to Indianapolis. We are pleased and excited that in only its second year, the IEEE CloudCom conference has more than doubled in size. The growth and enthusiasm of this conference serves to illustrate what a powerful emerging research area cloud computing has become. We received a very high number of paper submissions, making our acceptance quite competitive at less than 25%. I believe you find the papers, presenters and keynote speakers at CloudCom 2010 to be of exceptional quality.

Our organizing committee has also gone to great care to ensure that your stay in Indianapolis will be comfortable. From specially chosen meals, to fast internet, and our Thursday evening special live entertainment event, we trust that you will have an excellent conference experience. But at any time if there is anything we can do to make your stay more comfortable and enjoyable, please see one of the members of our conference staff.

I would like to thank the steering, organizing and program committees for their incredible effort and to IEEE and Indiana University for their support and sponsorship.

We look forward to providing you with an outstanding conference!

Sincerely,

A handwritten signature in black ink that reads "Geoffrey C. Fox".

Geoffrey C. Fox
IEEE CloudCom 2010 General Chair
Director, Digital Science Center
Pervasive Technology Institute at Indiana University

Conference Schedule: Tuesday, November 30

Time	Slate Foyer	Auditorium	Room 216	Room 206
8:00a	Registration & Check In			
8:30a				
9:00a			Yahoo! Tutorial Milind Bhandarkar	
9:30a				
10:00a				
10:30a				
11:00a				
11:30a				
12:00p				
12:30p				
1:00p				
1:30p		Welcome Address & Keynote Geoffrey Fox		
2:00p				
2:30p		Main Track Topic: Map Reduce	Main Track Topic: Services	Main Track Topic: Peer to Peer Architectures
		LEMO-MR: Low Overhead and Elastic MapReduce Implementation Optimized for Memory and CPU-Intensive Applications Z. Fadika, M. Govindaraju	Correlation based File Prefetching Approach for Hadoop B. Dong, X. Zhong, Q. Zheng, L. Jian, J. Liu, J. Qiu, Y. Li	A Mechanism of Flexible Memory Exchange in Cloud Computing Environments T. Okuda, E. Kawai, S. Yamaguchi
3:00p		Voronoi-based Geospatial Query Processing with Map Reduce A. Akdogan, U. Demiryurek, F. Banaei-Kashani and C. Shahabi	Reliability Support in Virtual Infrastructures G. Koslovski, W. Yeow, C. Westphal, T. Huu, J. Montagnat, P. Vicat-Blanc	A Novel Approach for Cooperative Overlay-Maintenance in Multi-Overlay Environments C.J. Hsu, W.C. Chung, K.C. Lai, K.C. Li, Y.C. Chung
3:30p		Break	Break	Break
4:00p		LEEN: Locality/Fairness- Aware Key Partitioning for MapReduce in the Cloud S. Ibrahim, H. Jin, Lu Lu, B. He, Li Qi, S. Wu	Self-Organizing Agents for Service Composition in Cloud Computing J. O. Gutierrez-Garcia, K. Sim	Sector/Sphere Tutorial Yuhong Gu
4:30p		Applying Twister to Scientific Applications B. Zhang, Y. Ruan, Tak-Lon Wu, J. Qiu, A. Hughes, G. Fox	elasticLM: A Novel Approach for Software Licensing in Distributed Computing Infrastructures W. Ziegler, C. Cacciari, F. D'Andria, B. Hagemeyer, D. G. PerÃ©z, D. Mallmann, J. Martrat, A. Rumpl, C. Zsigri, M. Gozalo	
5:00p		Evaluation of MapReduce for Gridding LIDAR Data S. Krishnan, C. Crosby, C. Baru	Building a Distributed Block Storage System for Cloud Infrastructure X. Gao, Yu Ma, M. Pierce, M. Lowe, G. Fox	

Conference Schedule: Tuesday, November 30

Time	Room 208	Break Service Stations	2 nd Floor Bistro	Room 102
8:00a		Continental Breakfast		
8:30a				
9:00a				
9:30a				
10:00a		Continuous Snack and Drink Stations		
10:30a				
11:00a			Continuous Lunch Buffet to 1:30 pm	
11:30a				
12:00p				Internet Café & Charging Station
12:30p				
1:00p				
1:30p				
2:00p				
2:30p	<p style="text-align: center;">Short Paper Session</p> <p>2:30 -2:50 pm Scheduling Hadoop Jobs to Meet Deadline Constraints K. KC, K. Anyanwu</p>			
3:00p	<p>2:50-3:10 pm Petri Net Modeling of the Reconfigurable Protocol Stack for Cloud Computing based Control Systems H. Chen, C. Zhou, N. Xiong</p> <p>3:10- 3:30 pm Tree-Based Consistency Approach for Cloud Databases S. Vrbsky Md. Ashfakul Islam</p>			
3:30p	Break			
4:00p	<p>4:00-4:20 pm Application-Oriented Remote Verification Trust Model in Cloud X. Zhang, H. Liu, X. Wang, S. Wu</p>			
4:30p				
5:00p				

Conference Schedule Wednesday, December 1

Time	Slate Foyer	Auditorium	Room 216	Room 206
7:00a	Registration & Check In			
7:30a				
8:00a		Opening Remarks (8:15 am)		
8:30a		Keynote: Ian Foster		
9:00a				
9:30a				
10:00a				
10:30a		Break	Break	Break
11:00a		Adopting Clouds Panel Geoffrey C. Fox Ian Foster Jose Fortes Keith R. Jackson Shantenu Jha Douglas Thain	Main Track Topic: High Performance Computing Analyzing Electroencephalograms Using Cloud Computing Techniques K. Ericson, S. Pallickara, C. W. Anderson	Twister Tutorial Judy Qiu Saliya Ekanayake
11:30a			Cost-effective HPC: The Community or the Cloud? A. Carlyle, S. Harrell, P. Smith	
12:00p			Middleware level solutions for SPMD Applications in Grids and Clouds B. Amedro, F. Baude, F. Huet, E. Mathias	
12:30p		Lunch Break	Lunch Break	Lunch Break
1:00p				
1:30p		Main Track Topic: Security A Token-Based Access Control System for RDF Data in the Clouds A. Khaled, M. Husain, L. Khan, K. Hamlen, B. Thuraisingham	Main Track Topic: Science Performance Analysis of High Performance Computing Applications on the Amazon Web Services Cloud K. Jackson, L. Ramakrishnan, K. Muriki, S. Canon, S. Cholia, J. Shalf, H. Wasserman, N. Wright	Microsoft Azure Tutorial Krishna Kumar
2:00p		Image Distribution in Large Scale Cloud Providers R. Wartel, T. Cass, B. Moreira, E. Roche, M. Guijarro, S. Goasguen, U. Schwickerath	Rapid Processing of Synthetic Seismograms Using Windows Azure Cloud V. Subramanian, L. Wang	
2:30p		A Hybrid and Secure Mechanism to Execute Parameter Survey Applications on Local and Public Cloud Resources H. Sun, K. Aida	Finding Tropical Cyclones on a Cloud Computing Cluster: Using Parallel Virtualization for Large-Scale Climate Simulation Analysis D. Hasenkamp, A. Sim, M. Wehner, K. Wu	
3:00p		Break	Break	
3:30p		Main Track Topic: Utility/Architecture Combinatorial Auction-Based Allocation of Virtual Machine Instances in Clouds S. Zaman, D. Grosu	Performing Large Science Experiments within a Cloud Architecture: Pitfalls and Solutions W. Lu, J. Jackson, J. Ekanayake, R. Barga, N. Araujo	
4:00p		Cost-Optimal Outsourcing of Applications into the Clouds I. Trummer, F. Leymann, R. Mietzner, W. Binder	Exploring Architecture Options for a Federated, Cloud-based Systems Biology Knowledgebase I. Gorton, J. Liu, J. Yin	
4:30p		Towards a Reference Architecture for Semantically Interoperable Clouds N. Loutas, V. Peristeras, T. Bouras, E. Kamateri, D. Zeginis, K. Tarabanis	Usage Patterns to Provision for Time Critical Scientific Experimentation in Clouds E. C. Withana, B. Plale	
5:00p		CloudView: Describe and Maintain Resource View in Cloud D. Zhou, L. Zhong, T. Wo, J. Kang	Semantics Centric Solutions for Application and Data Portability in Cloud Computing A. Ranabahu, A. Sheth	
6:30-9:30p	Poster, Demo, Emerging Research and Awards Reception (In Scholar's Hall) (Drinks and heavy Hors d'oeuvres)			

Conference Schedule, Wednesday, December 1

Time	Room 208	Break Service Stations	2 nd Floor Bistro	Room 102	Scholar's Hall
7:00a		Continental Breakfast		Internet Café & Charging Station	
7:30a					
8:00a					
8:30a					
9:00a	Map Reduce Workshop Opening				
9:30a	HAMA: An Efficient Matrix Computation with the MapReduce Framework S. Seo, E. J. Yoon, J. Kim, S. Jin, Jin-Soo Kim, S. Maeng				
10:00a	The Two Quadrillionth Bit of Pi is 0! Distributed Computation of Pi with Apache Hadoop Tsz-Wo Sze	Continuous Snack and Drink Stations			
10:30a	Break				
11:00a	Hybrid Map Task Scheduling for GPU-based Heterogeneous Clusters K. Shirahata, H. Sato, S. Matsuoka				
11:30a	Pepper: An Elastic Web Server Farm for Cloud based on Hadoop S. Krishnan, J. C. Counio		Continuous Lunch Buffet to 1:30 pm		
12:00p	Characterization of Hadoop Jobs using Unsupervised Learning M. Bhandarkar, S. Phadke, S. Aggarwal				
12:30p	Lunch Break				
1:00p					
1:30p	SSS: An Implementation of Key-value Store based MapReduce Framework H. Ogawa, H. Nakada, R. Takano, T. Kudoh				
2:00p	A Hybrid Distributed System Architecture for Storing and Processing Images from the Web M. Krishna, B. Kannan, A. Ramani				
2:30p	Cogset vs. Hadoop: Measurements and Analysis S. V. Valvåg, Å. Kvalnes, D. Johansen				
3:00p	Break				
3:30p	Howdah - a flexible pipeline framework for analyzing genomic data S. Lewis, S. Reynolds, H. Rovera, M. O'leary, S. Killcoyne, I. Shmulevich, J. Boyle				
4:00p	Scaling Populations of a Genetic Algorithm for Job Shop Scheduling Problems using MapReduce Di-Wei Huang, J. Lin				
4:30p	A Study in Hadoop Streaming with Matlab for NMR data processing K. Gunaratna, P. Anderson, A. Ranabahu, A. P. Sheth				
5:00p	A MapReduce-based architecture for rule matching in production system B. Cao, J. Yin, Qi Zhang, Y. Ye				
5:30p					
6:00p					
6:30 – 9:30p					Poster, Demo, Emerging Research and Awards Reception (Drinks and heavy Hors d'oeuvres)

Conference Schedule, Thursday, December 2

Time	Slate Foyer	Auditorium	Room 216	Room 206
7:00a	Registration & Check In			
7:30a				
8:00a		Keynote: Dennis Gannon		
8:30a				
9:00a		Cloud Standards Panel Stephen Diamond Wayne Adams David Bernstein Craig Lee Dawn Leaf Bret Piatt		
9:30a				
10:00a				
10:30a		Break	Break	Break
11:00a		Closed for Special Event Prep	Main Track Topic: Virtualization Affinity-aware Dynamic Pinning Scheduling for Virtual Machines Z. Li, Y. Bai, H. Zhang, Y. Ma	OpenNebula: Leading Interoperability and Innovation in Cloud Computing Management Tutorial Constantino Vazquez Borja Sotomayor
11:30a			Achieving High Throughput by Transparent Network Interface Virtualization on Multi-core Systems H. Zhang, Y. Bai, Z. Li, N. Du, W. Yang	
12:00p			Xenrelay: An Efficient Data Transmitting Approach for Tracing Guest Domain H. Jin, W. Cao, P. Yuan, X. Xie	
12:30p			Lunch Break	
1:00p				Lunch Break
1:30p			Main Track Topic: Power and Energy Power-Saving in Large-Scale Storage Systems with Data Migration K. Hasebe, T. Niwa, A. Sugiki, K. Kato	Open Stack Tutorial Bret Piatt
2:00p			Evaluation and Analysis of GreenHDFS: A Self Adaptive, Energy Conserving Variant of the Hadoop Distributed File System R. Kaushik, M. Bhandarkar, K. Nahrstedt	
2:30p			Main Track Topic: Science Data replication and power consumption in data grids S. Vrbsky, M. Lei, K. Smith, S. J. Byrd	
3:00p			Main Track Topic: Provisioning Resource Provisioning for Enriched Services in Cloud Environment R. Aoun, E.A. Doumith, M. Gagnaire	
3:30p			Break	Break
4:00p			Main Track Topic: Storage Using Global Behavior Modeling to Improve QoS in Cloud Data Storage Services J. Montes, B. Nicolae, G. Antoniu, A. Sanchez, M. S. Perez	Future Grid Tutorial Gregor von Laszewski Greg Pike
4:30p			Exploring the Performance Fluctuations of HPC Workloads on Clouds (Short) Y. El Khamra, H. Kim, S. Jha, M. Parashar	
5:00p			REMEM: REmote MEMory as Checkpointing Storage H. Jin, X.H. Sun, Y. Chen, T. Ke	
5:30p		Business and Industry Dinner Seminar 5:30-7:30p (Separate Registration Required) IUPUI Campus Center, Across the street Fourth Floor Room C		
7:00p		Pre-Show Reception in Auditorium Lobby Drinks and Light Snacks (Bar closes at 8:30 pm)		
8:00 - 9:30p		IEEE CloudCom 2010 Special Event! <i>Beat of Technology</i> Multimedia Art Exhibition and Musical Performance		

Conference Schedule, Thursday, December 2

Time	Room 208	Room 222	Break Service Stations	2 nd Floor Bistro	Room 102
7:00a			Continental Breakfast		Internet Café & Charging Station
7:30a					
8:00a					
8:30a					
9:00a					
9:30a					
10:00a			Continuous Snack and Drink Stations		
10:30a	Break	Break			
11:00a	Security Workshop Opening	Work in Progress Paper Session			
		(11:00-11:20p) Recommendations for Virtualization Technologies in High Performance Computing N. Regola, J.C. Ducom			
11:30a	Keynote Speaker Bhavani Thuraisingham	(11:20-1140p) A Comparison and Critique of Eucalyptus, OpenNebula and Nimbus P. Sempolinski, D. Thain (11:40-12:00p) Exploratory Project: State of the Cloud from University of Michigan and Beyond T. Ruthkoski		Continuous Lunch Buffet to 1:30 pm	
12:00p	(12:00-12:25p) Authorization as a Service for Cloud & SOA Applications U. Lang	(12:00-12:30p) Self-Caring IT Systems: A Proof-of-Concept Implementation in Virtualized Environments S. Kadirvel, J.A.B. Fortes			
12:30p	Lunch Break	Lunch Break			
1:00p					
1:30p	(1:30 – 1:55p) Security Services Lifecycle Management in On-Demand Infrastructure Services Provisioning Y. Demchenko, C. Laat, J. Espin, D. Lopez	(1:30-1:50p) Dynamic Resource Provisioning for Data Streaming Applications in a Cloud Environment S. Vijaykumar, Q. Zhu, G. Agrawal			
2:00p	(1:55-2:20p) Inadequacies of Current Risk Controls for the Cloud S. Creese, M. Auty, M. Goldsmith, P. Hopkins	(1:50-2:10p) User Demand Prediction from Application Usage Pattern in Virtual Smartphone J. Heo, K. Terada, M. Toyama, S. Kurumatani, E.Y. Chen (2:10-2:30p) Forecasting for Grid and Cloud Computing on-Demand Resources Based on Pattern Matching F. Despereux, E. Caron, A. Muresan			
2:30p	(2:20-2:45p) Modeling the Runtime Integrity of Cloud Servers: a Scoped Invariant Perspective J. Wei, C. Pu, C. V. Rozas, A. Rajan	(2:30-2:50p) Dynamic Request Allocation and Scheduling for Context Aware Applications Subject to a Percentile Response Time SLA in a Distributed Cloud K. Bolor, R. Chirkova, Y. Viniotis, T. Salo			
3:00p	(2:45-3:10p) A Privacy Impact Assessment Tool for Cloud Computing D. Tancock, S. Pearson, A. Charlesworth (3:10-3:35p) A Framework for evaluating clustering algorithm J. Wei, C. Pu, C. V. Rozas, A. Rajan	(2:50-3:10p) Initial Findings for Provisioning Variation in Cloud Computing M. S. Rehman, M.F. Sakr (3:10-3:30p) VDBench: A Benchmarking Toolkit for Thin-Client Based Virtual Desktop Environments A. Berryman, P. Calyam, m. Honigford, A. Lai			
3:30p	Break	Break			
4:00p	Do you get what you pay for? Using Proof-of-Work Functions to Verify Performance Assertions in the Cloud F. Koeppel, J. Schneider	(4:00-4:20p) Attaching Cloud Storage to a Campus Grid Using Parrot, Chirp and Hadoop P. Donnelly, P. Bui, D. Thain			
4:30p	Privacy, Security and Trust Issues Arising from Cloud Computing S. Pearson, A. Benameur	(4:20-4:40p) Power of Clouds in Your Pocket: An Efficient Approach for Cloud Mobile Hybrid Application Development A. Manjunatha, A. Ranabahu, A.P. Sheth, k. Thirunarayan (4:40-5:00p) CSAL: A Cloud Storage Abstraction Layer to Enable Portable Cloud Applications Z. Hill, M. Humphrey			
5:00p	CloudSEC: A Cloud Architecture for Composting Collaborative Security Services J. Xu, J. Yan, L. He, P. Su, D. Feng	(5:00-5:20p) Sustainable Network Resource Management System for Virtual Private Clouds T. Miyamoto, M. Hayashi, K. Nishimura			
5:30p	Trust and Cloud Services - An Interview Study Di-Wei Huang, J. Lin	(5:20-5:40p) Abstractions for Loosely-Coupled and Ensemble-based Simulations on Azure S. Jha, A. Luckow			
7:00-9:30	Reception and Special Entertainment Event (Cocktails and light snacks, In Auditorium)				

Conference Schedule, Friday December 3

Time	Slate Foyer	Auditorium	Room 216	Room 206
7:00a	Registration & Check In			
7:30a				
8:00a		Keynote: Kai Hwang		
8:30a				
9:00a		Resource Allocation for Computing Independent Tasks in the Cloud with Budget Constraint W. Shi, B. Hong	Nimbus Tutorial Kate Keahey David Labissoniere	HCI/Cloud Workshop Opening Keynote John M. Carroll
9:30a		A Multi-agent approach for Semantic Resource Allocation J. Ejarque, R. Sirvent, R. M. Badia		
10:00a		Investigating Business-driven Cloudburst Schedulers for e-Science Bag-of-Tasks Applications D. Maia, R. Santos, R. Lopes, F. Brasileiro		(10:00-10:20a) Energy Use in the Media Cloud: Behaviour Change or Technofix? C. Preist, P. Shabajee
10:30a		Break	Break	Break
11:00a		Cloud Security Panel Ravi Sandhu Josyula R Rao Peng Ning Sun Kim XiaoFeng Wang	Nimbus Tutorial (Continued)	(11:00-11:20a) Enabling Sustainable Clouds via Environmentally Opportunistic Computing M. Witkowski, P. R. Brenner, D. B. Go, R. Jansen, E. M. Ward
11:30a	Registration Closes at Noon			(11:20-11:40a) Social Impact of Privacy in Cloud Computing R. M. Esteves, C. Rong
				(11:40-12:00p) On the Sustainability Impacts of Cloud-enabled Cyber Physical Space T. W.r Wlodarczyk, C. Rong
12:00p				(12:00-12:20p) Framing the Issues of Cloud Computing & Sustainability: A Design Perspective Y. Pan, S. Maini, E. Blevins
12:30p		Lunch Break	Lunch Break	Lunch Break
1:00p				
1:30p		Main Track Topic: Provisioning/Scheduling Bag-of-Tasks Scheduling under Budget Constraints A. Oprescu, T. Kielmann		(1:30-1:50p) An Interface Design for Future Cloud-based Visualization Services Y. Tanahashi, C.K. Chen, S. Marchesin, K.L. Ma
2:00p		A Novel Heuristic-based Task Selection and Allocation Framework in Dynamic Collaborative Cloud Service Platform B. Song, M. M. Hassan, E.N. Huh		(1:50-2:10p) The Ethics of Cloud Computing: A Conceptual Review B. C. Stahl, V. Ikonen, J. Timmermans
				(2:10-2:30p) User Experience and Security in the Cloud - An Empirical Study in the Finnish Cloud Consortium N. Oza, K. Karppinen, R. Savola
2:30p		CloudBATCH: A Batch Job Queuing System on Clouds with Hadoop and HBase C. Zhang, H. Sterck		(2:30-2:50p) Cloud Computing for Enhanced Mobile Health Applications F. Mekuria, M. Nkosi
3:00p		A Novel Parallel Traffic Control Mechanism for Cloud Computing Zheng Li and Nenghai Yu		(2:50-3:40p) Group Discussion
3:30p				(3:40-3:50p) Workshop Closing Remarks
4:30p		CONFERENCE ENDS BY 4:30p		

Conference Schedule, Friday, December 3

Time	Room 208	Room 134	Break Service Stations	2 nd Floor Bistro	Room 102
7:00 am			Continental Breakfast		Internet Café & Charging Station
7:30 am					
8:00 am					
8:30 am					
9:00 am		Cloud Computing Standards Cataloging, Categorization, and Coordination Workshop (9:00a-4:30p)			
9:30 am		Please see http://2010.cloudcom.org for detailed workshop agenda			
10:00a			Continuous Snack and Drink Stations		
10:30a	Break				
11:00a	Work in Progress Session				
	(11:00-11:20a) Performance Considerations of Data Acquisition in Hadoop System B. Jia, T.W. Wlodarczyk, C. Rong				
11:30a	(11:20-11:40a) BetterLife 2.0: Large-Scale Social Intelligence in Cloud Computing D.H. Hu, Y. Wang, C.L. Wang			Continuous Lunch Buffet to 1:30 pm	
	(11:40-12:00p) Intercloud Security Considerations D. Bernstein, D. Vij				
12:00p	(12:00-12:20p) SafeVanish: An Improved Data Self-Destruction for Protecting Data Privacy L. Zeng, Z. Shi, S. Xu, D. Feng				
12:30p	Lunch Break				
1:00p					
1:30p	(1:30-1:50p) Efficient Metadata Generation to Enable Interactive Data Discovery over Large-Scale Scientific Data Collections S. Pallickara				
2:00p	(1:50-2:10p) Research Issues for Software Testing in the Cloud L.M. Riungu, O. Taipale, K. Smolander				
	(2:10-2:30p) MapReduce in the Clouds for Science T. Gunarathne, T. Wu, J. Qiu, G.C. Fox				
2:30p					
3:30p					
4:00p					
4:30p	CONFERENCE ENDS BY 4:30p				

Keynote Speakers

8 :30 am Wednesday, December 1



What the cloud *really* means for science

by Ian T. Foster, Director, CI, Distinguished Fellow, Argonne National Laboratory, IL, USA

Talk Abstract

We've all heard about how on-demand computing and storage will transform scientific practice. But by focusing on resources alone, we're missing the real benefit of the large-scale outsourcing and consequent economies of scale that cloud is about. The biggest IT challenge facing science today is not volume but complexity. Sure, terabytes demand new storage and computing solutions. But they're cheap. It is establishing and operating the processes required to collect, manage, analyze, share, archive, etc., that data that is killing creativity.

And that's where outsourcing can be transformative. I can run a small business from a coffee shop, outsourcing essentially every business function to a software-as-a-service provider--accounting, payroll, customer relationship management, the works. Why can't I run a research lab from a coffee shop? For that to happen, we need to make it easy for providers to develop "apps" that encapsulate useful capabilities and for researchers to discover, customize, and apply these "apps" in their work. The effect, I will argue, will be a dramatic acceleration of discovery.

About Ian Foster

Ian Foster is Director of the Computation Institute, a joint institute of the University of Chicago and Argonne National Laboratory. He is also an Argonne Senior Scientist and Distinguished Fellow, Chan Soon-Shiong Scholar and the Arthur Holly Compton Distinguished Service Professor of Computer Science. Ian received a BSc (Hons I) degree from the University of Canterbury, New Zealand, and a PhD from Imperial College, United Kingdom, both in computer science. His research deals with distributed, parallel, and data-intensive computing technologies, and innovative applications of those technologies to scientific problems in such domains as climate change and biomedicine. Methods and software developed under his leadership underpin many large national and international cyberinfrastructures.

Dr. Foster is a fellow of the American Association for the Advancement of Science, the Association for Computing Machinery, and the British Computer Society. His awards include the Global Information Infrastructure (GII) Next Generation award, the British Computer Society's Lovelace Medal, R&D Magazine's Innovator of the Year, and an honorary doctorate from the University of Canterbury, New Zealand. He was a co-founder of Univa UD, Inc., a company established to deliver grid and cloud computing solutions.

8 :00 am Thursday, December 2



The Client+Cloud: Changing the Paradigm for Scientific Research

by Dennis Gannon, Director of Engagements, eXtreme Computing Group; Microsoft Research

Talk Abstract

Cloud computing is now part of everyday life. We use cloud infrastructure to search the web, to store our files and to manage our e-mail and connect to our social networks. We even use it to translate text from one language to another. The cloud is the critical back-end to our most valued cell phone applications. While cloud-based applications have had a profound impact on our personal life, there had been little change in the way scholars go about their

research. However, several factors are about to cause a paradigm shift in the way scientists and engineers go about their work. The most significant forcing function of change is the arrival of the data tsunami. In many fields, data driven science, often referred to as the 4th paradigm of science, is now the leading edge of advanced research.

However, the majority of researchers do not have access to the emerging petabyte collections that are the new sources of scientific discovery. While a few have campus resources and laboratory clusters, most are saddled with doing limited analysis on small data collections on their desktop machines. Furthermore, most researchers do not want to manage infrastructure or learn to use supercomputers. They want to do science. In this talk we will argue that client-side applications that are intimately tied to advanced cloud-based data analysis tools and multi-petabyte, shared data collections will change the landscape for researchers. We will discuss a vision for cloud-based data analytics that starts with MapReduce-based tools, but extends to a host of other scalable applications.

About Dennis Gannon

Dr. Dennis Gannon is Director of Engagements for the eXtreme Computing Group in Microsoft Research led by Dan Reed. Prior to coming to Microsoft, Dr. Gannon was a professor of Computer Science at Indiana University and the Science Director for the Indiana Pervasive Technology Labs. Dr. Gannon's research interests include cloud computing, large-scale cyberinfrastructure, programming systems and tools, distributed computing, computer networks, parallel programming, computational science, problem solving environments. He led the DARPA HPC++ project and he was one of the architects of the Department of Energy SciDAC Common Software Component Architecture (CCA) project. He was a partner in the NSF Computational Cosmology Grand Challenge project and the NCSA Alliance and he was heavily involved in the NSF TeraGrid and the Global Grid Forum (now the Open Grid Forum). He was also a co-pi on the NSF LEAD project which built cyberinfrastructure for dynamic, adaptive weather prediction for severe storms like tornadoes and hurricanes.

Gannon has published over 100 refereed articles and he has co-edited 3 books. He received his Ph.D. in Computer Science from the University of Illinois Urbana-Champaign after receiving a Ph.D. in Mathematics from the University of California, Davis.

8 :00 am Friday, December 3



Security, Privacy, and Data Protection for Trusted Cloud Computing

by Professor Kai Hwang University of Southern California

Talk Abstract

Cloud computing and virtualization have been regarded as the cutting-edge computing technologies that may change the course of computing in the future. In this talk, Dr. Hwang will address the security, trust management, and data integrity issues for harnessing a virtualized cloud infrastructure over distributed datacenters. He will assess the role of virtualization technology in protecting cloud resources and datasets used in infrastructure (IaaS), platform (PaaS), and application (SaaS) services in both public and private clouds.

He will present a DHT overlay-based scheme for trust management and security defense against intrusions and worm attacks to provisioned virtual machines over datacenter servers and storage areas. In particular, security mechanisms, privacy protection, data watermarking, and copyright compliance will be discussed in using virtualized datacenter resources. The purpose is to build a trusted cloud environment for business applications (such as CRM) and for HTC (high-throughput Computing) applications in the cloud.

About Kai Hwang

Kai Hwang is a Professor of Electrical Engineering and Computer Science at the University of Southern California. He is also an IV-endowed visiting professor at Tsinghua University in China. He received the Ph.D. in EECS from UC Berkeley in 1972. He has published 8 books and over 210 scientific papers in computer architecture, parallel and distributed computing, network security, and Internet applications. He was awarded an *IEEE Fellow* in 1986 for making significant contributions in these areas.

Dr. Hwang received the 2004 *Outstanding Achievement Award* from China Computer Federation. He is the founding Editor of the *Journal of Parallel and Distributed Computing*. His latest research publications cover e-commerce, cloud computing, P2P networks, reputation systems, grid performance, and copyright protection. He has delivered 30 keynote addresses in major IEEE/ACM Conferences. He has also performed advisory and consulting work for IBM, Intel, MIT Lincoln Lab., Academia Sinica, ETL in Japan, and INRIA in France.

Panel Discussions

Adopting Clouds for Your Research or Enterprise?

Moderator

Geoffrey C. Fox, Distinguished Scientist and Director, Digital Science Center, Associate Dean for Research and Graduate Studies at the School of Informatics and Computing, Indiana University

Participants

Ian Foster, Director, CI, Distinguished Fellow, Argonne National Laboratory, Professor of Computer Science, University of Chicago

Jose Fortes, Director, ACIS & CAC, Professor and BellSouth Eminent Scholar, Department of Electrical and Computer Engineering, University of Florida

Keith R. Jackson, Scientist, Lawrence Berkeley National Lab

Shantenu Jha, Director of Cyber-Infrastructure Development (CyD) at the Center for Computation and Technology, Louisiana State University

Douglas Thain, Associate Professor, Computer Science and Engineering, University of Notre Dame

Plenary Panel on Cloud Computing Standards

Moderator

Stephen Diamond, IEEE Director, former IEEE President of the Computer Society, IEEE Treasurer, and Member of the IEEE Board of Governors. Steve is currently employed as Global Standards Officer and General Manager of Industry Standards in the office of the CTO at EMC Corporation.

Participants:

Wayne Adams

Chairman, SNIA

Tomonori Aoyama, President of the Global Inter-Cloud Technology Forum (GICTF). Tomonori is currently Professor at Keio University, Graduate School of Media and Governance in Japan, Professor Emeritus of the University of Tokyo, and is a Member of the Science Council of Japan.

David Bernstein, Vice-Chair IEEE Cloud Computing Standards Study Group (CCSSG). David is currently employed as Special CTO and VP of Cloud Computing, North America R&D, at Huawei Technologies, Ltd.

Craig Lee, President of the Open Grid Forum (OGF), and Chair of the OGF Grid Forum Steering Group (GFSG). Craig is currently employed as Senior Scientist, Computer Systems Research Department at The Aerospace Corporation.

Dawn Leaf

Senior Executive for Cloud Computing, NIST

Bret Piatt

Community Stacker, OpenStack

Plenary Panel on Cloud Security and Privacy: What is new and What needs to be done?

Moderator:

Ravi Sandhu, University of Texas at San Antonio: Executive Director and Chief Scientist, Institute for Cyber Security (ICS), Lutch Brown, Endowed Chair in Cyber Security, Professor of Computer Science (College of Science)

Participants:

Josyula R Rao, Senior Manager, Secure Software and Services, IBM Research, Watson

Peng Ning, Professor, Department of Computer Science, North Carolina State University, Technical Director, Secure Open Systems Initiative

Sun Kim, Associate Professor and Division Chair, School of Informatics and Computing, Indiana University at Bloomington

XiaoFeng Wang, Associate Professor, School of Informatics and Computing, Indiana University at Bloomington

Special Events

Poster Session, Emerging Technologies Session, Demos and Awards Reception

Wednesday, December 1
6:30-9:30 pm
Scholar's Hall

Enjoy live piano music, cocktails and food while mingling with colleagues and learning what's on the cutting edge in cloud computing

The Beat of Technology

A Special Live Entertainment Event – Only at CloudCom 2010!

Thursday, December 2

8:00-9:30 pm
Pre-show reception begins in the lobby at 7:00 pm with
cocktails and light snacks.
Main Auditorium

Be there on Thursday, December 2, 2010 when the curtain rises on a wholly original technology-enabled experience in music and art by IU's own Scott Deal and Margaret Dolinsky. Deal and his telematic band, Big Robot will perform new and original pieces complemented by Dolinsky's haunting and beautiful digital artwork at this special premier for CloudCom 2010.



IU Cloud Computing for Business and Industry Dinner Seminar

(Separate registration required)

International cloud computing experts from Indiana University and industry leaders working at the cutting edge show what clouds can do for your business. Cloud computing holds great potential for the private sector – from large corporations to small, locally-owned businesses - offering increased computational power at often significant cost savings.

Special event held in conjunction with the IEEE CloudCom 2010 Conference hosted by Pervasive Technology Institute at Indiana University:

Date: Thursday, December 2, 2010

Time: 5:30-7:30 pm

Location: IUPUI Campus Center (Across the street from University Place Conference Center Scholar's Hall Entrance)

Enjoy a four course dinner while hearing presentations from from Indiana University, Microsoft Research, Yahoo! and others. Have a chance to ask questions and converse with leaders in the international cloud computing community.

Speakers include:

Dennis Gannon

Dr. Dennis Gannon is Director of Engagements for the eXtreme Computing Group in Microsoft Research led by Dan Reed. Prior to coming to Microsoft, Dr. Gannon was a professor of Computer Science at Indiana University and the Science Director for the Indiana Pervasive Technology Labs. Dr. Gannon's research interests include cloud computing, large-scale cyberinfrastructure, programming systems and tools, distributed computing, computer networks, parallel programming, computational science, problem solving environments. He led the DARPA HPC++ project and he was one of the architects of the Department of Energy SciDAC Common Software Component Architecture (CCA) project. He was a partner in the NSF Computational Cosmology Grand Challenge project and the NCSA Alliance and he was heavily involved in the NSF TeraGrid and the Global Grid Forum (now the Open Grid Forum). He was also a co-pi on the NSF LEAD project which built cyberinfrastructure for dynamic, adaptive weather prediction for severe storms like tornadoes and hurricanes. Gannon has published over 100 refereed articles and he has co-edited 3 books. He received his Ph.D. in Computer Science from the University of Illinois Urbana-Champaign after receiving a Ph.D. in Mathematics from the University of California, Davis.

Milind A. Bhandarkar

Dr. Milind Bhandarkar has been contributing to Apache Hadoop and Pig since version 0.1. He has been focused on parallel programming languages and paradigms for over 20 years. He worked at the Center for Development of Advanced Computing (C-DAC), Center for Simulation of Advanced Rockets (UIUC), Siebel Systems, and Pathscale before joining Yahoo! in 2005.

Geoffrey C. Fox

Dr. Geoffrey C. Fox is Distinguished scientist and Director of Digital Science Center. He is Associate Dean for Research and Graduate Studies at the School of Informatics and Computing, Indiana University. He is Professor of Computer Science, Informatics and Physics. Fox received a Ph.D. in Theoretical Physics from Cambridge University. His Pioneer work on Parallel Computing has contributed to the design and implementation of HyperCube system. He previously held positions at Caltech, Syracuse University and Florida State University. He has supervised the PhD of 61 students and published over 600 papers in physics and computer science. He is principal investigator of NSF PolarGrid project for Ice-sheet Science and FutureGrid project - a new facility to enable development of new approaches to Cloud and Grid Computing.

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