

An Intelligent IT Infrastructure for the Future

SPEAKER

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ABSTRACT

The proliferation of new modes of communication and collaboration has resulted in an explosion of digital information. To turn this challenge into an opportunity, the IT industry will have to develop novel ways to acquire, store, process, and deliver information to customers — wherever, however, and whenever they need it. An “Intelligent IT Infrastructure,” which can deliver extremely high performance, adaptability and security — will be the backbone of these developments. At HP Labs, the central research arm for Hewlett Packard, we are taking a multidisciplinary approach to this problem by spanning four areas: computing, storage, networking and nanotechnology. We are working on the design of an exascale data center that will provide 1000X performance while enhancing availability, manageability and reliability and reducing the power and cooling costs. We are working on helping the transition to effective parallel and distributed computing by developing the software tools to allow application developers to harness parallelism at various levels. We are building a cloud-scale, intelligent storage system that is massively scalable, resilient to failures, self-managed and enterprise-grade. We are designing an open, programmable wired and wireless network platform that will make the introduction of new features quick, easy and cost-effective. Finally, we are making fundamental breakthroughs in nanotechnology — memristors, photonic interconnects, and sensors — that will revolutionize the way data is collected, stored and transmitted. To support the design of such an intelligent IT infrastructure, we will have to develop sophisticated system-level design automation tools that will tradeoff system-level performance, power, cost and efficiency.

Speaker Biography

Prith Banerjee is senior vice president of research at HP and director of HP Labs, the company’s central research organization. In these roles, he assists the HP executive vice president of strategy and technology in charting technical strategies for the company, and he heads HP Labs, which has seven locations worldwide. Most recently, he was Dean of the College of Engineering at the University of Illinois at Chicago. He also is the founder, chairman and chief scientist of BINACHIP Inc., a developer of products and services in electronic design automation. Previously, Banerjee was the Walter P. Murphy Professor

and Chairman of electrical and computer engineering at Northwestern University. Prior to that, he was the Director of the Computational Science and Engineering program and Professor of electrical and computer engineering at the University of Illinois at Urbana-Champaign. In 2000, he founded AccelChip Inc., a developer of products and services for electronic design automation, which was sold to Xilinx Inc. in 2006. His research interests are in very-large-scale integration (VLSI) computer-aided design, parallel computing and compilers, and he is the author of about 300 research papers in these areas. He has also supervised about 35 Ph.D. students. Banerjee currently serves on the Computer Science Advisory Board of the National Academy of Engineering and the advisory board for the Anita Borg Institute for Women and Technology. In the past, he has served on the technical advisory boards of companies such as Ambit Design Systems, Atrenta and Calypto Design Systems. He is a Fellow of the American Association for the Advancement of Science, the Association for Computing Machinery and the Institute of Electrical and Electronics Engineers. He was the recipient of the 1996 American Society for Engineering Education Terman Award and the 1987 National Science Foundation Presidential Young Investigator Award. He received a Bachelor of Technology in electronics and electrical engineering from the Indian Institute of Technology in Kharagpur, India in 1981, and a Master of Science and Ph.D. in electrical engineering from the University of Illinois at Urbana-Champaign in 1982 and 1984 respectively.