

29th International
Conference on
VLSI Design

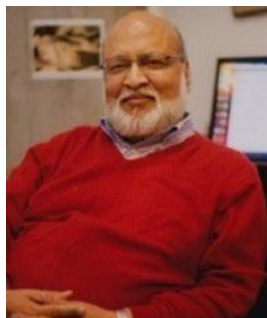


15th International
Conference on
Embedded Systems

January 4-8, 2016. KOLKATA, INDIA

Theme: **Technologies for a Safe and Inclusive World**

Conference Website: vlsidesignconference.org



BlueDBM: A Multi-access, Distributed Flash Store for Big Data Analytics

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Complex analytics of the vast amount of data collected via social media, cell phones, ubiquitous smart sensors, and satellites is likely to be the biggest economic driver for the IT industry over the next decade. For many "Big Data" applications, the limiting factor in performance is often the transportation of large amount of data from hard disks to where it can be processed, i.e. DRAM. We will present BlueDBM, an architecture for a scalable distributed flash store which is designed to overcome this limitation in two ways. First, the architecture provides a high-performance, high-capacity, scalable random-access storage. It achieves high-throughput by sharing large numbers of flash chips across a low-latency, chip-to-chip backplane network managed by the flash controllers. Second, it permits some computation near the data via a FPGA-based programmable flash controller. We will present the preliminary results on accelerating complex queries using BlueDBM consisting of 20 nodes and up to 20TB of flash.

Biography: Arvind is the Johnson Professor of Computer Science and Engineering at MIT. Arvind's group, in collaboration with Motorola, built the Monsoon dataflow machines and its associated software in the late eighties. In 2000, Arvind started Sandburst which was sold to Broadcom in 2006. In 2003, Arvind co-founded Bluespec Inc., an EDA company to produce a set of tools for high-level synthesis. In 2001, Dr. R. S. Nikhil and Arvind published the book "Implicit parallel programming in pH". Arvind's current research focus is on enabling rapid development of embedded systems.

Arvind is a Fellow of IEEE and ACM, and a member of the National Academy of Engineering and the American Academy of Arts and Sciences.