Energy Efficient Data Storage Systems

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Abstract:
With the rapid growth of the production and storage of large scale data sets it is important to investigate methods to drive the cost of storage systems down. We are currently in the midst of an information explosion and large scale storage centers are increasingly used to help store generated data. There are several methods to bring the cost of large scale storage centers down and we investigate a technique that focuses on transitioning storage disks into lower power states. This talk introduces a model of disk systems that leverages disk access patterns to produce energy saving opportunities for parallel disk systems. We also focus on the implementation of an energy-efficient storage cluster, where a couple of energy-saving techniques are incorporated. Our modeling and simulation results indicated that large data sizes and knowledge about the disk access pattern are valuable for storage system energy savings techniques. Storage servers that support applications that stream media is one key area that would benefit from our strategies.

Biography:
Dr. Xiao Qin is an Associate Professor in the Department of Computer Science and Software Engineering at Auburn University. He received the B.S. and M.S. degrees in Computer Science from Huazhong University of Science and Technology, China, in 1996 and 1999, respectively. He received the Ph.D. in Computer Science from the University of Nebraska-Lincoln in 2004. Prior to joining Auburn University in 2007, he had been an assistant professor with New Mexico Institute of Mining and Technology (New Mexico Tech) for three years. He won an NSF CAREER award in 2009 to conduct research on multicore-based parallel disk systems. His research interests include parallel and distributed systems, real-time computing, storage systems, fault tolerance, and performance evaluation. His research is supported by the U.S. National Science Foundation, Auburn University, and Intel Corporation.