



NCAR

National Center for Atmospheric Research

CISL SEMINAR SERIES

Presents: Dr. Sam Siewert, University of Colorado

SOLVE - Scalable Offload and Logical Volume Engine

Hosted by Henry Tufo

ABSTRACT:

High Performance Computing and scalable media systems share the need for access to large volumes of data through gigabit IO channels on demand in real-time or much faster. A typical enterprise 15K RPM drive is only capable of 100's of Kbyte/sec data access with high rotational and actuator latency. While storage areal density has scaled over time, access performance in terms of IOs per second, bandwidth, and more specifically latency and cost per gigabyte accessed per second has significantly lagged Moore's law. One approach to address this access bottleneck is solid state disk, but this solution has hundreds of times the cost of traditional spinning media. Spinning media is inherently limited by physics, yet massively parallel arrays of disks and actuators (100's per RU) can achieve breakthrough performance and provide simple IO and access interfaces if virtualized and managed effectively as a single highly available store.

Research at the University of Colorado in partnership with Sherwood Information on virtualization interfaces to massively parallel RAID arrays using small form factor, low-cost, off-the-shelf SATA drives known as SOLVE (Scalable Offload and Logical Volume Engine) is addressing cost effective next generation architecture for high performance storage and IO. Key technologies in research include in-data-path hybrid reconfigurable processing, intelligent cache, large scale virtualization and RAID, controller memory and bus scaling, automatic recovery and management virtualization for high availability. The end result is terabyte to petabyte storage that appears as one volume with access performance and density orders of magnitude better than current technology at several orders of magnitude less cost than solid state disk. This basic research is applicable to emergent related work in massively parallel MEMS storage arrays as well.

Date, Time, and Location:

Tuesday, June 5, 2007

11:00 AM – 12:00 PM

ML Damon Room

