Carnegie Mellon Opens Data Center Observatory

On May 23, 2006 Carnegie Mellon University held a lab dedication ceremony for the new Data Center Observatory (DCO), a dual-purpose facility that is both a working data center and a research vehicle for the study of data center automation and efficiency, as well as new technologies and paradigms to enable more secure data storage systems. The ceremony, held at the Collaborative Innovation Center, included representatives from the university, American Power Conversion (APC), local business leaders and select members of the news media.

The DCO is a large-scale collaborative effort between Carnegie Mellon's College of Engineering and School of Computer Science. It also includes participation from a number of industry and government partners, including APC, which is providing engineering expertise and its InfraStruXureÂ® system for powering, cooling, racking and managing equipment in the DCO.

The DCO's principle research goals are to better comprehend and mitigate human administration costs and complexities, power and cooling challenges, and failures and their consequences. It also aims to understand resource utilization patterns and opportunities to reduce costs by sharing resources among users.

The 2,000-square-foot DCO has the ability to support 40 racks of computers, which would consume energy at a rate of up to 774 kW â€" more than the rate of consumption of 750 average-sized homes. In addition to studying dense computing environments, the DCO will support a variety of Carnegie Mellon research activities, from data mining to CAD/architecture, visualization and real networked services.

"The Data Center Observatory gives us a unique testbed for evaluating and benefiting from efforts to automate administration, such as our Self-* Storage project," said CyLab-affiliated faculty memberGreg Ganger, a professor of electrical and computer engineering and director of the Parallel Data Lab (PDL), a Carnegie Mellon organization specializing in the study of storage systems.

The Self-* Storage project explores new storage architectures that integrate automated management functions and simplify the human administrative task. Self-* storage systems are self-configuring, self-

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organizing, self-tuning, self-healing, self-managing systems of storage bricks. Borrowing organizational ideas from corporate structure and technologies from AI and control systems, Self-* storage should simplify storage administration, reduce system cost, increase system robustness, and simplify system construction.