EnviProt
The PowerSafe Company

LoCal

Going Green: University of California, Berkeley

"Here, for example, we are monitoring 77 PCs. In effect, 80% of what we would have spent for that population of desktops, we've saved with Auto Shutdown Manager."

Dr. David Culler, *Professor of Computer Science*
University of California, Berkeley

Dr. David Culler, professor of Computer Science at the University of California, Berkeley, explains wireless power monitoring.

Challenge
Dr. Culler searches for a way to identify and eliminate wasteful power expenditure in the Berkeley community.

Solution
Auto Shutdown Manager, coupled with wireless power meters, provide a significant reduction in energy usage.

Benefits

- Much simpler than a home-grown solution.
- Delegation by servers allows flexibility across departments.
- Stable platform is ready for rollout to thousands of computers.

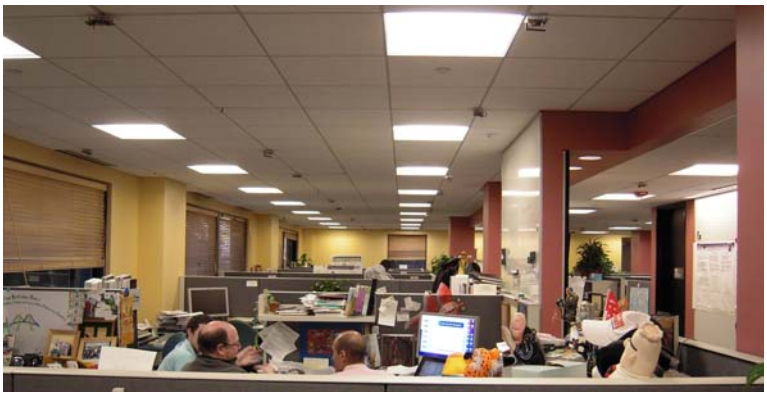
Location
Berkeley, CA

Auto Shutdown Manager is deployed at U.C. Berkeley as part of the LoCal power monitoring and conservation project.

Dr. David Culler is working with U.C. Berkeley and the California Energy Commission to understand, measure and reduce how energy is wasted in campus buildings as part of the "*LoCal*" initiative. He and his team of Ph.D. students developed wireless, network-capable power meters to measure electricity usage in real time. Out of the several hundred computers running Auto Shutdown Manager (ASDM) at U.C. Berkeley, 77 are directly monitored with these devices.

"We are looking into how to use information technology to understand how you're spending your energy, and how to eliminate the portions that you're not getting anything from," says Dr. Culler. "It's not like you can look in the budget under 'w' and there's a line item of 'waste' that can go cross out. Waste is a chronic phenomenon; it happens everywhere."

Dr. Culler and his group found that ASDM fit their need for configurability and scalability. Says Dr. Culler: "we surveyed much of the space; we looked at all of the free tools, the open tools, the for-pay tools… ASDM is light years ahead of anything else I've seen in the industry."



RAD Lab, located in Soda Hall on the U.C. Berkeley campus, is home to the LoCal project. All of the PCs in this building use Auto Shut Down Manager.

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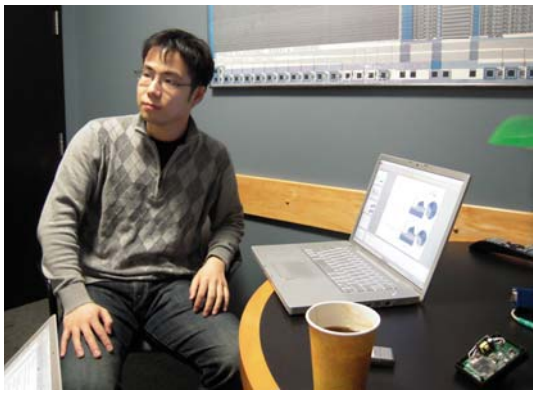

Ph.D. student Xiaofan Jiang explains how power consumption is monitored.

Xiaofan Jiang, a Ph.D. student of Dr. Culler's, said they were surprised to find where the energy was going. "Desktop PCs account for 51% of all the energy usage we measured in the lab. Lights, LCDs, they're all less than desktops. And they are the only part that doesn't change at night. Obviously the right thing to do is to somehow save this portion when people are not in the lab. ASDM is the right solution," says Jiang.

Once the group deployed ASDM, the savings were almost immediate. After installing ASDM, explains Jiang: "PC power consumption dropped significantly. This is what happens when ASDM comes in; it is a very, very useful tool." Measurements revealed that over 60% of PCs with ASDM installed had energy savings of 90% or more.

"People really want to do it. They embrace the opportunity to reduce their [carbon] footprint."

- Dr. David Culler

"Wherever you're doing sensing and understanding, you also want to do something about it. This is one example of what we can do: we can manage power on the desktop PCs," commented Dr. Culler. The group is also preparing to scale up their deployment of ASDM: "in order to get meaningful penetration, we really will have to do it as a community. That is what I want to do."

The flexibility and scalability of ASDM makes this a real possibility. "It was quick to bring up, and the instructions for how to do it were quite simple," says Dr. Culler. "We're certainly ready to roll out the thousand-fold pilot. "

Special thanks to: Dr. David Culler, Xiaofan Jiang & RAD Lab.

An ACme wireless power meter, developed and implemented as part of the LoCal project.

Auto Shutdown Manager: www.enviprot.com