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Money Isn't All You're Saving

CASE STUDY

Automatic Activation of ENERGY STAR® Features in Monitors at US DOE's Energy Efficiency and Renewable Energy Office

Focus: This case study focuses on automatic activation and auditing of ENERGY STAR® features in networked monitors.

US DOE/EERE Pilot Implementation—Stats at a Glance

Number of Computer Systems	312
Energy savings with automatic implementation	$5,300/year
Energy savings with automaticmplementation plus follow-up interviews	$5,900/year
Projected energy savings if pilot implementation extended to all of US DOE	$120,000/year

"Because there was no response of any kind from users following activation, we were unsure that the activation had actually occurred. The first audit report confirmed that it had."

David Ensign, Manager of the DOE Microtechnology Support

Background

The US Department of Energy (DOE), along with the US Environmental Protection Agency (EPA), is a sponsor of the ENERGY STAR® program, that develops specifications for reducing energy use in desktop computers and monitors, among other devices and systems. Although computers and monitors can be designed and manufactured with ENERGY STAR features, they are sometimes shipped without these energy conservation features being enabled or disabled at the user site by installation personnel or users. In large organizations, with hundreds or thousands of computer systems, it may not be practical to check and modify each system individually. Recognizing this problem, DOE's Microtechnology Support Team (MST) developed a suite of computer tools in 1999 to automatically evaluate and modify the energy conservation features of networked computers. MST's efforts in this area were directed by David Ensign, Manager.

MST's philosophy is that monitors can provide over 90% of the potential energy savings for computer system with little or no implementation impacts. While recognizing that other computer processor components, such as disk drives and sound cards, can be safely powered down, the Team chose to focus their attention on monitor power savings. The three network tools developed by the Team were:

• Energy Audit Program (determines usage of monitor energy conservation features),

• Audit Report Program (generates summary reports from audit logs), and

• Activation Program (automatically activates energy conservation features in networked monitors).

Pilot Implementation Program

In order to test the effectiveness of these tools as part of an overall energy conservation program, a pilot implementation was performed in DOE's Office of Energy Efficiency and Renewable Energy (EERE). This Office contained 312 computer system users when the pilot program began in early May 2000. The program consisted of the following elements:

Baseline Audit

The baseline audit revealed a low level of use of monitor energy conservation features. The baseline audit showed that only 30% of users had activated the ENERGY STAR shutdown or standby modes of their monitors; only 52% had activated screen savers; and only 12% had activated both screen savers and the energy conservation modes of their monitors. Finally, only 1% of eligible users had selected what the MST considers to be optimal settings for energy conservation features.

Upper Management Support

A week prior to automatic activation, e-mail messages were sent to all computer users from the EERE Assistant Secretary indicating a high-level of management support; alerting users to the upcoming activation effort; and providing educational information regarding monitor energy conservation features.

Automatic Activation

The Activation Program was added to user network logins in early May. Upon execution, the Activation Program had no discernable effects on computer operations within EERE. The first audit report following the activation date confirmed that monitor settings had been changed automatically, as designed. Only two out of over 300 users experienced operating difficulty as a result of the automatic activation. In both cases, the difficulty was found to be caused by a systemic workstation problem, not an ENERGY STAR-related problem, and was quickly resolved.

Audit

An audit was conducted one month following automatic activation. This audit showed that 92% of eligible systems had been activated and were compliant with MST's recommended energy conservation features and settings. Of the non-compliant systems, most were new systems that had joined the network after the automatic

activation program had been disabled. Another audit performed 3 months after activation showed 85% of the monitors in compliance.

Interview with Users Out of Compliance

Interviews were conducted by MST staff with users whose systems were out of compliance following automatic activation to determine the causes and to identify any technical or behavioral issues. User reluctance to monitor power management was due to perception of long monitor recovery time, technical problems, alterations to power management settings, and the belief that a blank screen affected their productivity. MST staff held informational sessions with these users to understand their reluctance, demonstrate the effectiveness of proper monitor power management, and change their behavior. As a result, 90% of the monitors were in compliance at the pilot's end.

Pilot Program Results

As a result of the application of the MST network tools and procedures,

- The energy savings compliance rate among EERE monitors increased from 12% before the pilot program to 85% with automatic activation alone. Conducting one-on-one interviews with several non-compliant users identified by the Audit Program raised this level to 90%;

- The automatic Activation Programs and Audit Programs operated seamlessly and without significant technical difficulties. No issues were found that would prevent roll-out of these tools to the entire DOE user network, nor to other networks in similar large organizations.