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AIR FORCE EXPECTED TO SAVE $15 MILLION ANNUALLY BY CHANGING COMPUTER PURCHASING AND POWER MANAGEMENT POLICIES

Tasked with reducing IT energy use, the Air Force's Enterprise Configuration Management Office (AFECMO) and Information Technology Commodity Council (ITCC) established and implemented new procurement and power management guidelines for computers and monitors. The changes are expected to lead to savings of $15 million annually and reduce power plant carbon dioxide emissions by over 100,000 tons per year.[1]

Background

The U.S. Air Force (AF) operates one of the largest and most sophisticated IT organizations in the world. More than 500,000 desktops and laptops are deployed at over 100 bases in the United States, Europe, Asia, and the Middle East.

Signed in January 2007, Executive Order 13423 requires federal agencies to:

- Purchase ENERGY STAR qualified computers.[2] (With the latest July 2009 update to the computer specification, ENERGY STAR qualified computers have improved average power draw of 67 watts to 46 watts in a two year time frame – a reduction of 30%!)
- Activate ENERGY STAR power saving features on computers and monitors

This case study summarizes the organizational structure, leadership and technical tools used by the AF to comply with Executive Order 13423.

ENERGY STAR Purchasing – Part of Air Force Policy Since 2004

Compliance with the ENERGY STAR purchasing requirement of EO 13423 had actually been in place for some time. ITCC and AFECMO have worked together since 2004 to implement a consistent standard computer configuration across the entire AF. Under the current strong leadership and direction of the AF CIO, Lt. General William Lord and the Assistant Secretary of Acquisition, Roger Correll, AFECMO developed and maintains a standard desktop configuration for AF computers that lowers costs, improves security, and reduces application conflicts. The ITCC negotiates the best overall life-cycle value for hardware and software by managing the Quarterly Enterprise Buy (QEB) purchasing program. Since 2004, the AF specified ENERGY STAR qualified computers for the standard desktop core configuration. To ensure ENERGY STAR qualified computers were purchased, the following steps were taken:

- An outreach program was established including periodic notices from the Air Force CIO on the new standardized desktop configuration. Readers were reminded that all AF computer purchases must meet the standard configuration.
- Twice a year, ITCC revises the buying standards for the QEB purchasing program for ENERGY STAR qualified AF computers. QEB bulk purchasing power leads to such low prices that AF personnel, even if allowed to go to other vendors and not specify ENERGY STAR units, would not be able to find comparable price and performance.
- Models are available for easy purchase through the AFWay –a Web-based system for purchasing IT. AFWay guides users through needs identification, approval and purchase in a straight forward process. Computer selection is simplified; users can choose from 14 different desktop computer and laptop configurations, 3 monitor types and have options for increasing RAM and battery size.

Lessons Learned:

At the Federal agency scale, a fully- implemented green computer purchasing and power management policy requires:

- High-level leadership from IT and acquisition groups.
- Representation from all operational units in the core computer configuration and power. management policy development
- Focused communication strategy that informs early and often.
- A simplified menu of approved models and configurations that make purchases easy.

[1] *Assuming national average commercial electricity rates (Energy Information Agency, 2010) and 1.54 lbs CO2/kWh (EPA, 2009).*

[2] *Executive Order 13423 requires EPEAT registered computers. Part of the EPEAT criteria is that the computers and monitors be ENERGY STAR qualified.*

"As the Air Force CIO I am responsible for driving energy efficient environmentally safe information technology (IT) solutions to support the Air Force Global Information Grid. Our priorities are focused on power management and reduction of power consumption. I expect the Air Force to stay in the forefront of our nation's efforts to implement IT programs that achieve these strategic objectives."

– Lt. General William Lord,
Chief of Warfighting Integration and Chief Information Officer

- Each of the Major Commands' CIO is represented in ITCC, which works with the Major Commands to insure that each base enforces the purchasing policy. Only through a waiver approved by the organization's Major Command CIO may a computer not compliant with the buying standard be purchased.

ENERGY STAR Power Management - Evaluation of Different Options

To activate sleep settings on AF computers and monitors, AFECMO and ITCC addressed a number of concerns, including establishing a means to:

- Distribute power management setting quickly and easily.
- Prevent users from altering the setting.
- Not interfere with night-time updates.

Beginning in September 2008, AFECMO sought a power management solution that allows for enterprise control and secure operation for all non-exempt ITCC personal computers running the Federal Desktop Core Configuration (FDCC), and blocks end users from adjusting power management settings.[3] AFECMO, with technical support from the U.S. Environmental Protection Agency ENERGY STAR Low Carbon IT campaign (www.energystar.gov/lowcarbonit), reviewed a number of different public domain, operating system, and third-party vendor solutions.[4] After evaluating the options, AFECMO decided to use Microsoft (MS) Group Policy, already used by the AF to manage other current enterprise items. In MS Vista, enterprise-wide power management settings are available using Group Policy. In MS Windows XP with Service Pack 3, Microsoft has a similar capability for XP machines in Group Policy Preferences. Using Microsoft's programs, AFECMO will activate power management for XP machines and sleep settings for Vista machines by the end of 2009.

To optimize power savings and system performance, AFECMO developed a two-phase system providing the ability to install updates without leaving computers on overnight. In Phase I, AFECMO implemented Task Scheduler[5] to wake computers from sleep each night at 2 AM to install updates. A complication arose with Task Scheduler - computers return to sleep after 1 minute with the updates uninstalled. To resolve this, AFECMO developed the "Stay Awake" program, allowing the machine to stay up for a specified amount of time up to 23 hours. The enterprise level program signals the computer once every minute for a specified period of time, preventing the return to sleep. This software was developed for the AF by Microsoft, and can be provided for use elsewhere.

The Results

With 525,000 computers in use by the AF, AFECMO and ITCC anticipate 95% of all QEB-procured computers and monitors will be ENERGY STAR qualified by the end of 2009. As of November 2009, they were at 90%.

The AF obtained additional funds for power management implementation in September of 2009. Although power management will be an ongoing effort, the AF plans to complete enablement of power management settings for 500,000 systems by January 31, 2010 and energy saving reporting by June 30, 2010. While there are some mission exceptions, this will encompass well over 500,000 client systems.

By activating power management and purchasing more efficient computers, the Air Force will save $15 million annually. For more information, please contact:

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"Air Force leadership has done an outstanding job implementing ENERGY STAR IT purchasing and power management efforts across such a massive scale and serves as a fine example for other agencies."

– Una Song,
U.S. Environmental Protection Agency ENERGY STAR

[3] *These settings allowed the monitor and computer to enter low-power sleep mode after 10 minutes and 30 minutes of inactivity, respectively.*

[4] *See http://www.energystar.gov/index.cfm?c=power_mgt.pr_power_mgt_implementation_res for a listing*

[5] *Task Scheduler is a component of Microsoft Windows that provides the ability to schedule the launch of programs or scripts at pre-defined times or after specified time intervals.*