The Computerworld Honors Program

Honoring those who use Information Technology to benefit society

Final Copy of Case Study

Status:
Laureate

Year:
2013

Organization Name:
HP Data Center Services – Global Facilities

Organization URL:
hp.com

Project Name:
Data Center Sustainability Initiative

Please select the category in which you are submitting your entry:
Sustainability

Please provide an overview of the nominated project. Describe the problem it was intended to solve, the technology or approach used, how it was innovative and any technical or other challenges that had to be overcome for successful implementation and adoption. (In 300 words or less.)

Two of the most daunting issues to face IT providers and users are overall operational costs for the data center facility, coupled with the staggering amount of energy required for large-scale computing. If not properly addressed, these issues can have disastrous effects on a company's competitiveness, as well as degradation of the environment. HP's Data Center Sustainability Initiative represents an ongoing program of multiple projects and activities to address and alleviate these issues. Our primary objectives are to 1) achieve significant reduction in the carbon footprint, 2) realize overall energy savings by instituting innovative technologies and best practices for data center build and operation, and 3) improve the competitive positioning of HP and its clients by lowering operational costs. Broadly speaking, the initiative employs multiple strategies and tactics to achieve these positive results. The approaches included data center transformation and consolidation to reduce the data center footprint into fewer energy efficient facilities. As a result, millions of kWh have been saved and tens of thousands of

metric tons of carbon emissions have been reduced. Another approach for data center sustainability is our Next Generation Data Center (NGDC) design and build. HP continues to make technical and environmental improvements in our new data center facilities. New technologies, such as the rotary heat exchanger, are implemented where appropriate. Other technologies employed are new generation economizer evaporative cooling and high-efficiency hot aisle containment systems. Use of these technologies represent a significant increase in energy efficiency and reduction in power consumption.

When was this project implemented or last updated? (Please specify month and year.) Has it incorporated new technologies and/or other innovations since its initial deployment? (In 300 words or less.)

The Data Center Sustainability Initiative formally kicked off at the beginning of HP's 2010 fiscal year (November 2009) and continues as an HP best practice. During this time innovative technologies, along with improved practices and data center consolidations, have been employed to produce a continuous positive impact on stated objectives of reduced carbon footprint and measureable energy savings. As an example; For FY 2010, through transformation and consolidation of facilities, HP gave back 112,966 square feet of computing space. The resultant decrease in CO2 emissions was estimated to be equivalent to removing 3,891 cars from the road. The associated 32,222,422 kWh savings represents powering 2,919 (US) homes for a year. Based on our Next Generation Data Center (NGDC) design, HP has also continued to make technical and environmental improvements in our new data center facilities. New technologies, such as the rotary heat exchanger, which takes advantage of outside air to improve cooling efficiency and reduce power consumption, are implemented where appropriate. Use of this technology alone is expected to save $24M in utility costs over the next twenty years. Another example of using break-through technologies for data center sustainability is HP's construction of the Sydney (AUS) data center. The site incorporates new generation economizer evaporative cooling technology in concert with a high-efficiency hot aisle containment system to achieve landmark Power Usage Effectiveness (PUE) measures for the Sydney region of 1.3 or less. This represents a significant reduction in power consumption as normal PUE measures around 2.0 or higher.

Is implementation of the project complete? If no, please describe the project's phases and which phase the project is now in. (In 300 words or less.)

Although many of our underlying activities have come to fruition, the initiative continues through FY2013 with such plans as ultrasonic humidification, supply air temperature control conversion, plenum integrity, aisle containment, free air cooling retrofit, and VFD upgrade. Additionally, HP continues to review operation and energy requirements within our data centers to determine possibilities for further reduction of carbon footprint and energy savings.

Please provide at least one example of how the technology project has benefited a specific individual or organization. Feel free to include personal quotes from individuals who have directly benefited from the work. (In 300 words or less.)

Specific to HP's construction of the Sydney data center, the investment helps capture more of the IT markets growing requirements for efficiencies found in cloud computing services, application modernization and data center transformation, as well as decreasing environmental impact. Communications minister, Senator Stephen Conroy, has said the new data center would further drive Australia's participation and competiveness in the digital economy. "The data centre will provide vital infrastructure that will, among other things, allow more Australian businesses to move their IT operations to cloud computing, thereby reducing costs and improving information sharing," Conroy said in a statement. "I expect that industry, and particularly the ICT industry, will continue to play an important role in promoting the opportunities of the digital economy to enhance productivity."

Would this project be considered an innovation, a best practice or other notable advancement that could be adopted by or tailored for other organizations and uses? If yes, please describe that here. (In 300 words or less.)

HP began the Data Center Sustainability Initiative in order to provide for environmental sustainability, savings from decreased energy usage, and overall business improvement. As such, HP has always considered these activities to be best practice in the design, build, and operation of data centers. The advancements realized through this initiative have made a positive effect on HP, its clients, and the communities in which these data centers are located. Although this particular initiative focuses on HP-owned data centers, many of the break-through design and operational features HP has employed are shared with clients operating non-HP data centers through our Critical Facilities (CFS) organization and other HP consultive teams.

If there are any other details that the judges should know about this project, please note them here. (In 300 words or less.)

There is a tremendous difference between total data center improvement and space and power considerations. To this end, the Data Center Sustainability Initiative works hand in hand with HP's efforts to transform and modernize data center infrastructure. For true savings and energy efficiencies, data center improvements must include identifying redundancies in the compute infrastructure so unneeded or underutilized equipment can be unplugged and eliminated. Updates should include consolidating applications whenever possible, and employing energy-efficient computing technologies. By making improvements in both data center facility operation and compute infrastructure, companies can save money and at the same time reduce their electrical consumption and make an important difference in the volume of carbon emissions they generate. Modernization and moderation are the keys. With better facility design and management, companies can improve and maximize their overall efficiency, saving hard dollars and making a positive impact on our environment.